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# Economic and Demographic Factors Associated With Consumer Debt Use

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# ECONOMIC AND DEMOGRAPHIC FACTORS ASSOCIATED WITH CONSUMER DEBT USE

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## Abstract

This paper analyzes factors associated with consumer debt use to identify the probable effects of market deregulation, tax reform and demographic shifts on household leverage. The results suggest that deregulation of credit markets can account for a significant portion of the increase in credit outstanding relative to disposable income since 1983. The growth of the incidence of two income families has also had a positive effect on the household debt burden measure. Finally, debt-use and the amount of debt used relative to income is significantly higher for households that itemize deductions for tax purposes. Tax reform that alters the tax incentives for using debt can be expected to have a significant negative effect on the amount of consumer credit held by high-income families.

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# ECONOMIC AND DEMOGRAPHIC FACTORS ASSOCIATED WITH CONSUMER DEBT USE

A. Charlene Sullivan and Debra Drecnik Worden

The market for consumer credit has undergone dramatic changes in the recent past, the most important being extensive deregulation and the development of a national market for consumer credit products. These developments have been accompanied by an increase in the supply of credit. As credit outstandings have grown, many have expressed concern about consumers' ability to judge their own credit worthiness and the amount of credit they can manage. This paper analyzes the economic, demographic and policy variables related to (1) whether a household unit uses consumer credit and (2) the amount of credit used relative to household income. The purpose of the analysis is to identify the effects of deregulation, tax reform and demographic trends on consumer credit decisions.

The first section of the paper describes the data analyzed in the study while the second section deals with consumer credit market conditions as they existed in 1983 when the household survey data analyzed in the study were collected. The latter discussion provides the reader with an environmental framework within which to interpret the results of the analysis. In the third section, the multivariate analyses of the factors related to household use of consumer credit are presented. In the final section of the paper, we discuss the implications of the results of the cross-sectional analysis especially with regard to the effects of tax reform and deregulation.

## I. The Data

In 1983, a national sample of 3,824 households participated in a survey in which a complete inventory of assets and liabilities was taken. Further, information about attitudes, risk preferences, savings intentions and experience with creditors was collected. This study uses those data to identify factors related to the household debt-use decision. There have been dramatic changes in the consumer credit market in the last six years so an important part of this study is the documentation of credit market conditions as they existed at the time the data were collected.

## II. Conditions in the Consumer Credit Market

The consumer credit market was in a state of transition in 1983. Interest rates had peaked in 1982. In response to inflation-driven rate pressures, many states totally deregulated consumer loan rates between 1980 and 1983. The official bottom of the last business cycle was recorded in November 1982 and, relatively speaking, households had a low amount of consumer debt obligations relative to disposable income and liquid asset balances.

### A. Deregulation

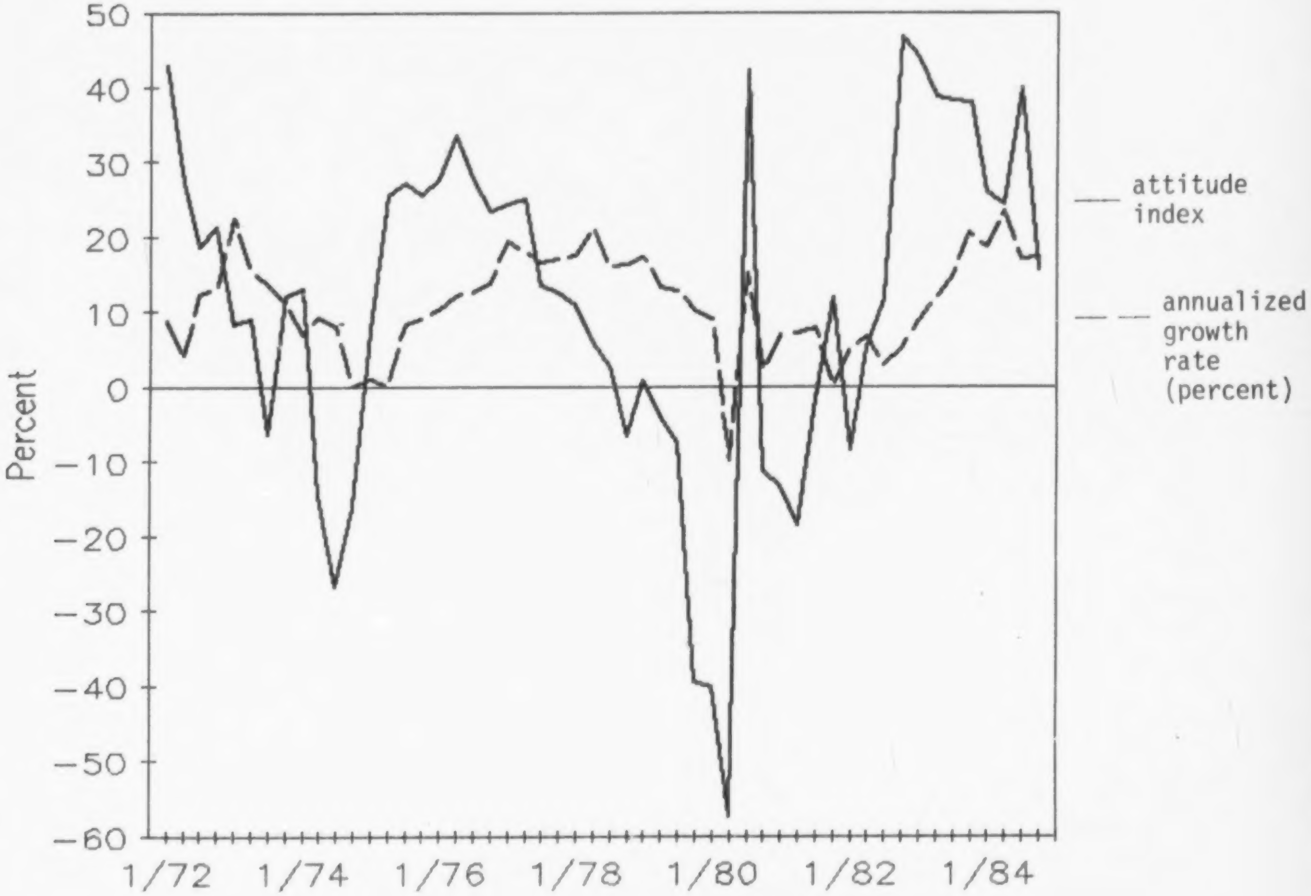
After the high inflation of the late 1970s, many state legislatures passed laws that raised or totally removed the rate ceilings that applied to prices for various types of consumer credit. In 1983, 20 states limited the rate that could be charged to 18 percent or below, but in most cases these ceilings were above the market rate of interest and so were not binding. The remaining states were either totally deregulated or had ceilings above 18 percent.

The effect of interest rate ceilings on the supply of credit in the last 14 years can be seen in Exhibit 1--a chart of an index of bankers' willingness to extend consumer instalment credit overlaid with a chart of the annualized growth rate of total consumer credit outstanding from quarter to quarter. The index of willingness is the net difference between the percentage of banks that responded in quarterly "Bank Lending Practices" surveys (collected and reported by the Federal Reserve Board) that were "more" rather than "less" willing to make consumer instalment loans than they were three months previously. Over time, increases in the index of bankers' willingness to extend consumer instalment credit have been associated with the extent to which existing rate ceilings were binding. When lenders' opportunity cost moved close to or exceeded consumer credit ceilings, bankers became less aggressive in marketing consumer credit.

In 1974 and 1980 the general level of interest rates was high relative to rates allowed under existing rate ceilings. In both periods, there was a sharp decline in the bankers' willingness index. The annualized quarterly growth rate of consumer credit fell in 1974-75 and from 1980 to mid-1982.

Exhibit 1

Lender Attitudes and Credit Growth Rates



January 1972 to December 1984

SOURCE: Credit Research Center, Purdue University

In the second half of 1982 and early 1983, the index of bankers' willingness to extend consumer credit increased sharply and credit outstanding grew steadily during 1983. We conclude from the data presented in Exhibit 1 that, during the period of our study, consumers did not have great difficulty finding lenders interested in making consumer loans. However, tight conditions just prior to the data-collection period could have had an effect on the results of our analysis, especially among consumers who had been turned down for credit between 1980 and 1982.

### B. The State of Revolving Credit

Tremendous change characterized the revolving credit market in the late 1970s and early 1980s. The most noteworthy development was the Marquette National Bank decision by the Supreme Court (1978) which enabled national banks to issue credit cards to consumers and charge rates determined by the rate structure of the state in which the bank was domiciled rather than that of the state in which the consumer resided. In 1979, South Dakota removed its rate ceiling, attracting national banks to set up credit card operations there. Citicorp moved its credit card operation to South Dakota and initiated its first nationwide solicitation campaign for bank credit cards to five million customers in 35 states in 1981.

Although much of the deregulation for credit cards occurred between 1980 and 1982, there was little change in aggregate credit card statistics during that time period (Table 1). Credit card activity changed dramatically between 1982 and 1983. Since 1982, there has been a rapid

## Table 1

## Growth of Bank Card Credit

| | Credit Card Purchasing as Percentage of Non-Housing Expenditures (all cards) | Number of Active Visa and Master Card Accounts (millions) | Average Outstanding Balance per Active Account (Visa & MasterCard) |
|---|---|---|---|
| 1980 | 12.6% | 48.8 | $509 |
| 1981 | 12.5 | 46.5 | 532 |
| 1982 | 12.1 | 49.9 | 537 |
| 1983 | 13.6 | 54.2 | 585 |
| 1984 | 15.5 | 64.5 | 650 |
| 1985 (2nd qtr) | 15.0 | 68.9 | 653 |

SOURCE: Demuth "The Case Against Credit Card Interest Rate Regulation," Yale Journal on Regulation, 3 (Spring 1986) increase in the number of cardholders, the average size of account, and in the importance of credit cards as a transactions medium.

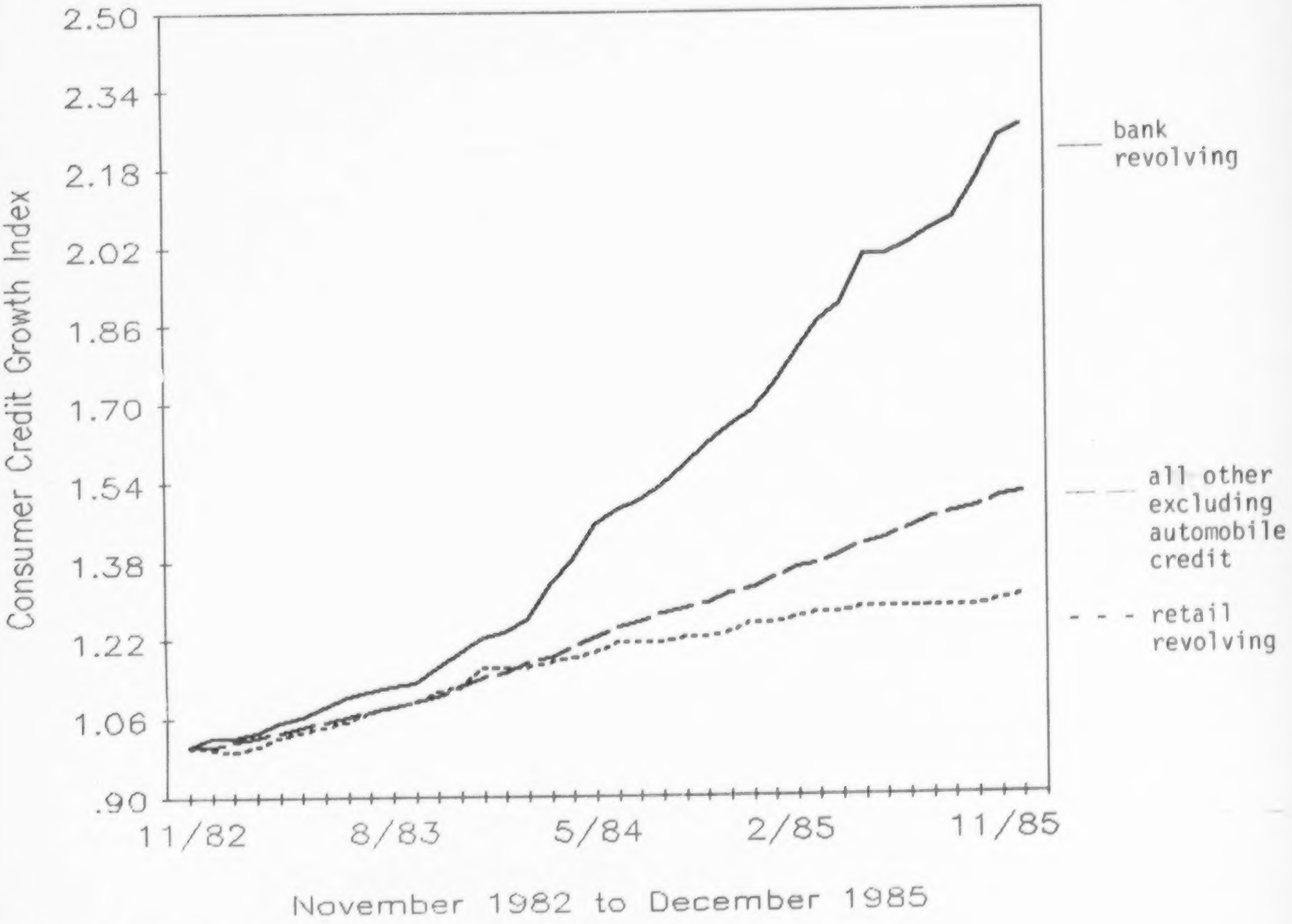
During 1983, revolving credit from commercial banks was increasing faster than retail credit and nonautomotive consumer credit by a slight margin (Exhibit 2). Late in 1983, revolving credit outstanding held by banks surged and continued to climb at a dramatically faster pace than other forms of nonautomotive credit until the end of 1985.

The implication of this market condition is that the effects of credit cards on consumers' general willingness to use consumer debt will not be as pronounced in the analysis of data collected in 1983 as would be the case if the analysis were based on data collected in later years. However, many consumers in the sample had credit cards and used them regularly. And, although enabling legislation had not been around for long, some of the policies of lenders operating in deregulated markets can be identified by examining the differences in the characteristics of the cardholding base in 1977 and 1983.

Canner and Cyrnak found that general patterns in card ownership and card usage changed very little between 1977 and 1983. Ownership of bank cards, in particular, had changed little, but there were interesting changes in bank card usage patterns. Between 1970 and 1977 there were large changes in the percent of high-income households that used bank cards. As high-income households' demand for credit cards was satisfied in the early stages of the market expansion, there were relatively small changes in the percentage of high income families using cards between 1977 and 1983 (Table 2). Instead, the use of bank cards by the lowest-income

Exhibit 2

Consumer Credit Growth Index



SOURCE: Credit Research Center, Purdue University

Table 2

Changes in Percentage of Households Using

Bank Cards by Card Holder Income

| Family Income (current dollars) | 1970 - 1977 | 1977 - 1983 |
|---|---|---|
| $5,000 - 7,499 | + 33% | +200% |
| 7,500 - 9,999 | 250 | 170 |
| 10,000 - 14,999 | 114 | 60 |
| 15,000 - 19,999 | 200 | 38 |
| 20,000 - 24,999 | 107 | 29 |
| 25,000 - 29,999 | 95 | 19 |
| 30,000 - 39,999 | 72 | 19 |
| 40,000 - 49,999 | 65 | 20 |
| >50,000 | 92 | 9 |

SOURCE: Calculated from data presented in Canner and Cyrnak, 1985.

households increased dramatically during the later period as card issuers loosened credit standards in their conquest for new cardholders in new markets.

### C. The Marketing of Auto Loans

In 1977 the average new auto loan contract written by an auto finance company had a maturity of 40 months. The most likely maturity increased steadily until 1983 (Exhibit 3). The effect of lengthening maturities is to allow a borrower to purchase a larger, more expensive car or to accept a contract with a higher annual percentage rate, while keeping the size of the monthly payment low. With the lengthening of maturities, monthly auto payments relative to monthly disposable income declined from 2.0 percent in 1979 to 1.6 percent in 1983.[1]

The marketing strategy to lengthen maturities of auto loans may have had a significant influence on the probability of credit use measured in 1983. This is evidenced by the fact that the size of the monthly payment was considered the most important term in an auto credit contract by almost 31 percent of households surveyed in 1983 (Table 3).

Financial affiliates of manufacturers offered special incentive rates on auto loans for the first time, but on a limited scale, in the summer of 1981 and in early 1982. These early programs were not based on deep discount rates. The first program with a significant discount in the loan rate was introduced in late 1982. Therefore, some of the borrowers in the

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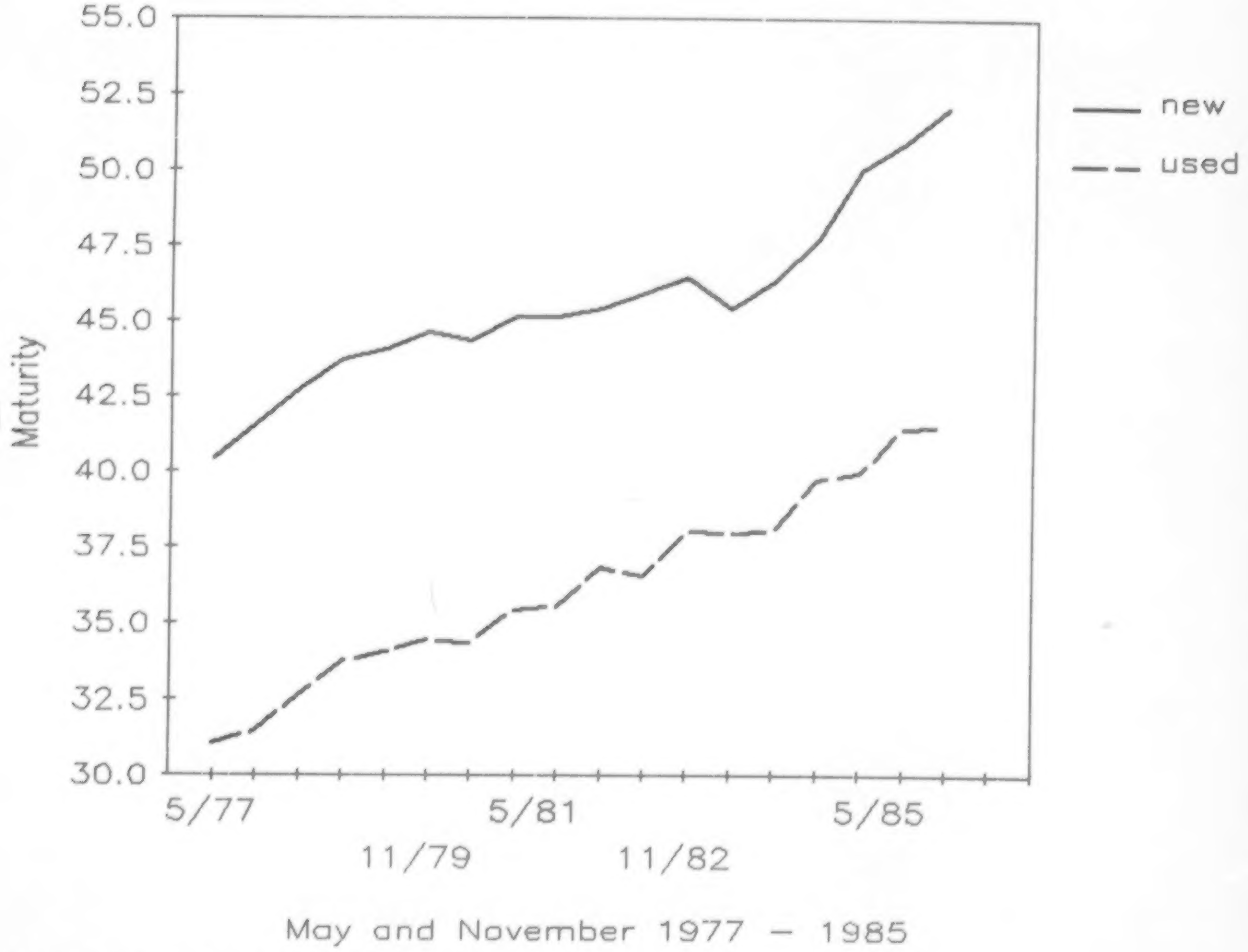
[1] Business Week, October 21, 1985, p.24.

Exhibit 3

Average Maturity for Auto Loans

From Finance Companies

(months)



SOURCE: Federal Reserve Board

## Table 3

## Relative Importance of Credit Terms: Automobile Loans

| Loan Characteristic | Percent Ranking First | Percent Ranking Not In Top 3 |
|---|---|---|
| Loan size | 19.4 | 48.0 |
| Dollar amount of finance charge | 16.1 | 50.2 |
| Monthly payment size | 31.6 | 22.4 |
| Annual percent interest rate | 19.2 | 44.7 |
| Late payment charge | 0.2 | 92.0 |
| Rebate for early payoff | 1.8 | 79.4 |
| Loan collateral | 1.0 | 86.4 |
| Down payment | 6.6 | 57.9 |

SOURCE: 1983 Survey of Consumer Finances, Federal Reserve Board of Governors.

sample probably had taken out auto loans with the discounted rates. However, the effect of the discount loan rate programs will not be as pervasive as would be the case had the analyses been based on data collected more recently.

## D. The After-Tax Real Cost of Credit

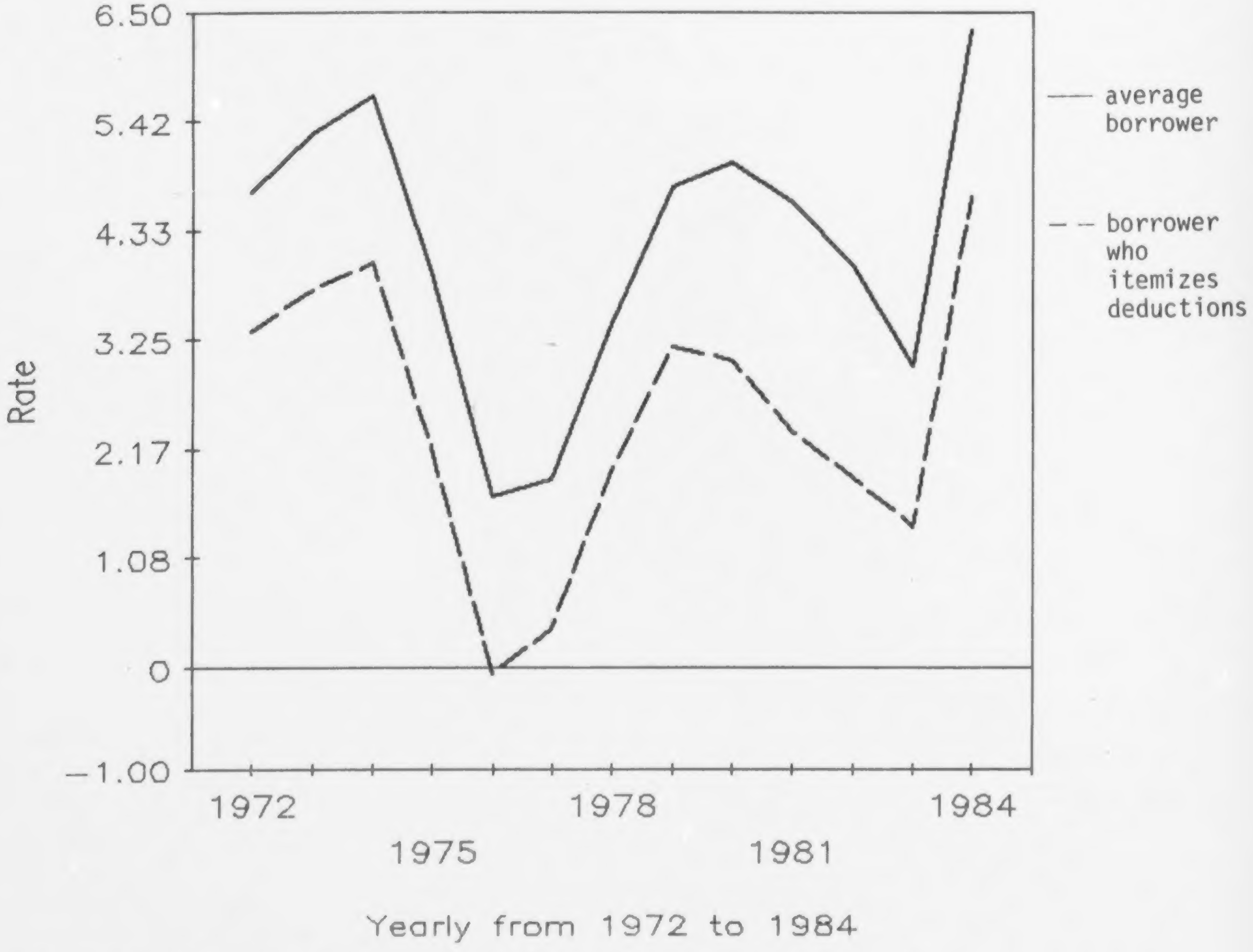
An economic variable that could be an important factor in consumers' decision to use credit is the expected after-tax real cost of credit. During the years prior to the collection of the survey data, the rate of inflation had been very high, pushing down the real cost of credit. And, many middle-income consumers had been pushed into higher marginal tax brackets by inflationary increases in income, further reducing their after-tax cost of using credit. To get an idea of the real cost of credit during the year when the survey data were collected, we estimated the annual after-tax real rate for a new auto loan from a commercial bank for each year from 1972 to 1984. In 1983 the anticipated real after tax cost of credit was relatively low (Exhibit 4), given the assumption that consumers estimate future inflation by extrapolating from the past.

In the chart, the after-tax cost of credit for the average consumer is a weighted average based on the fact that about 62 percent of the tax returns do not list itemized deductions. The lower line represents the cost of credit for the taxpayer who itemizes deductions and pays taxes at a marginal rate equal to the average tax rate paid by all taxpayers. This low level of the expected real cost of credit may have had an especially important influence on the debt use decisions of middle to high income consumers.

Exhibit 4

After-Tax Real Cost of New Auto Loan

(from commercial banks)



SOURCE: Credit Research Center, Purdue University

### Table 4

### Percent of Households in Debt and Share of Total Debt, by Income Quintile

### 1970, 1977, 1983

| | Income Quintile | | | | | |
|---|---|---|---|---|---|---|
| Year | Lowest | Second | Third | Fourth | Highest | |
| | Proportion of households in debt | | | | | |
| 1970 | 23% | 47% | 61% | 67% | 47% | |
| 1977 | 30 | 51 | 63 | 65 | 58 | |
| 1983* | 29 | 49 | 53 | 60 | 61 | |
| | Share of total debt in survey | | | | | Totals |
| 1970 | 4% | 15% | 31% | 28% | 22% | 100% |
| 1977 | 4 | 12 | 20 | 28 | 37 | 100 |
| 1983* | 4 | 11 | 17 | 26 | 42 | 100 |

*includes revolving credit card debt only; the convenience use of credit cards is not included.

SOURCES: 1977 Consumer Credit Survey and 1970 and 1983 Survey of Consumer Finances.

Households in the highest income quintile experienced the greatest increase in the probability of debt use between 1970 and 1983 (Table 4). Additionally, the percentage of the total debt in the sample increased noticeably for the highest income quintile between 1970 and 1983.

Based on the evidence that debt use increased rapidly among consumers who were in a position to realize the tax shield advantage of debt, the tax incentives associated with debt may significantly influenced credit use decisions. This question is investigated further in the cross-sectional analysis.

From this analysis of the consumer credit market conditions that existed in 1983, we conclude that at the time the data for this study were collected, markets were relatively unconstrained by regulation. Consumer credit outstanding relative to income was growing from the low reached at the bottom of the business cycle in November 1982. The anticipated real cost of credit was at a historically low level, especially for those borrowers who itemized their deductions. Revolving credit was being made increasingly available to lower-income, higher-risk consumers. And the financial affiliates of auto manufacturers had adjusted both the maturity and rate terms of auto credit contracts to increase the affordability of auto credit.

## III. Cross-Sectional Analysis on Household Debt Use

Households use consumer credit to fund current consumption. Thus, demand for credit is a derived demand, based on the household's demand for consumption. We hypothesized that the probability of debt use and the amount of debt used by the household is a function of the socio-demographic and financial attributes of the household which are related to its consumption demand. Further, demand for credit may be influenced by individual attitudes toward credit use and tax-related incentives. Finally, local market conditions such as legislation (rate ceilings) may alter households' willingness or ability to use consumer credit.

### A. The Probability of Debt Use

In this section we examine those factors which systematically impact the decision of the household to finance consumption through debt. The estimated regression model allows us to identify the effect of specific independent variables on the probability that a household will have consumer instalment debt in its financial portfolio. The dependent variable takes the value of one if the household had consumer debt outstanding at the time of the survey, and zero otherwise. The debt measure includes consumer instalment and revolving credit card debt. Mortgage and rent payments, irregular payment debt, amounts owed on lines of credit (other than credit cards), and balances on credit cards which were paid off every month were excluded.[2]

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[2] Of those consumers who reported holding credit cards, 48 percent said they paid all balances in full each month. Most nonrevolvers reported zero credit card balances, further confirming that they did not consider the credit balance as debt. Including nonrevolving credit card debt in our analyses did not alter the results significantly.

## Table 5

### Factors Associated With The Probability of Consumer Debt Use in The Household Balance Sheet

| Independent Variable | Estimated Coefficients | t-statistics |
|---|---|---|
| Life cycle stage | | |
| Young single | -0.1* | -3.22 |
| Single parent | -0.1* | -3.04 |
| Older/working | -0.1* | -3.60 |
| Older/retired | -0.2* | -6.45 |
| Mortgage | 0.1* | 8.11 |
| Number in household | 2E$^{-2}$* | 3.26 |
| Two-incomes | 0.1* | 3.09 |
| Region of residence | | |
| West | 0.1* | 2.29 |
| South | 4E$^{-2}$* | 2.36 |
| Income related measures | | |
| Income | 6E$^{-7}$ | 0.72 |
| Income squared | 5E$^{-13}$ | 0.26 |
| Stable income | 0.1* | 6.39 |
| Relative income | | |
| Yng single-Hi | 0.1* | 3.25 |
| Sing parent-Hi | 0.1* | 2.04 |
| Old/Wrk-Hi | 2E$^{-2}$ | 0.67 |
| Old/Ret-Hi | -3E$^{-2}$ | -0.89 |
| FamForm-Hi | 2E$^{-2}$ | 0.55 |
| Liquid assets | -6E$^{-6}$* | -7.51 |
| Liquid squared | 2E$^{-11}$* | 5.00 |
| Attitude towards credit | | |
| Good idea | 4E$^{-2}$* | 2.27 |
| Bad idea | -0.1* | -5.58 |
| Interest rate regulation | | |
| Low ceiling | 2E$^{-2}$ | 0.77 |
| Prior rejection | 0.1* | 3.09 |
| Constant | 0.4 | 10.23 |

| | |
|---|---|
| adjusted $R^2$ | 0.24 |
| number of observations | 3359 |

*significant at the 95 percent level of confidence

The results of the analysis of the probability of household debt use are presented in Table 5.[3] A significant negative sign on an estimated coefficient indicates an inverse relationship between the probability that the household uses consumer credit and the magnitude of the explanatory variable, whereas a positive sign means that a greater likelihood of using debt is associated with higher values of the variable. In the case of a 0-1 binary variable, a significant negative (positive) coefficient indicates that the likelihood that the household uses consumer credit is less (greater) when the variable takes the value of one than when it takes the value of zero.

Socio-Demographic Variables. A household's demand for consumer credit is hypothesized to be a significant function of its life cycle stage. Young households in their family formation years (couples under 45 years of age) have high consumption demand relative to their stream of earnings. They are highly likely to use credit to smooth out the differences in the time pattern of consumption needs and income. The results of the analysis shows that these households were significantly more likely to use consumer credit than young single people or young single parents. Older households typically have lower consumption needs and were significantly less likely, relative to young couples, to use consumer credit. (In the analysis, couples under 45 years of age were included in the constant term. The coefficient on the life cycle variable measured differences between households in other stages of life and this group.)

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[3] Table A.1 in the appendix defines the explanatory measures, and table A.2 presents the mean values of all variables in the analyses.

Because of the growing number of households consisting of single parents with children present and young single persons, measures of the relative incomes for these life cycle stages were included in the analysis. Although significantly less likely to use instalment debt than young families, the probability of debt use by those householders was a function of their relative income. Consumers in these two stages, whose income was above the medians for their peer groups, were significantly more likely to use consumer credit. These results may have captured the heterogeneity of individuals within these groups, as those with higher incomes are likely to have a significantly greater amount of human capital (higher education and upward mobility) to rely on for the repayment of debt. These individuals may be considered more creditworthy by lenders than their peers with lower relative income and less human capital.

The number of persons living in the household was included in the analysis to capture an additional aspect of consumption demand. As expected, holding all else constant, the number of persons living in the household had a significant positive influence on the probability that a household used instalment debt.

Financial Variables. The level of its annual income was not related to the probability that the household used consumer credit in 1983. In contrast to these results, similar analysis of data collected in 1956 showed that the probability of credit use increased significantly with the level of household income, but at a decreasing rate.[4]

The absence of a relationship between the level of household income and the probability of debt use in the later data may be a reflection of the effects of deregulation and innovation on the supply of credit. Deregulation of interest rates and the increased availability of credit cards have increased the return and reduced the cost from providing small amounts of credit for low-income consumers, and the supply of credit products available to them has increased. The cost of consumer credit by high-income households has also changed since 1956 with tax incentives for using credit, the proliferation of credit cards, and special financing programs by auto manufacturers.

Although the level of income did not influence the probability of household debt use, the stability of earnings did. A household was more likely to use consumer instalment debt if at least one income earner in the household was employed in a stable industry, where stable implied that employment is relatively invariant to changes in the business cycle. The study based on data collected in 1956 found that households with stable income were less likely to use instalment credit than those with fluctuating income. In 1983 households with stable income may have been more likely to use consumer credit because of supply conditions. With the ready availability of bankruptcy relief, lenders may have viewed applicants employed in industries with highly volatile earnings as high risk. Since the economy was just emerging from the bottom of the business cycle at the time of the survey, those households may in fact have been very uncreditworthy. Given that scenario, it is not surprising to find that those households with less stable earnings had been rationed out of the credit market.

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[4] See Lansing, Maynes and Kreinin, 1956.

To capture the influence of having two incomes on the probability of household debt use, we included a measure for the presence of a second wage earner. Holding income constant, those households with two wage earners were significantly more likely to use instalment debt. In an analysis of data from 1982-1983, the Bureau of Labor Statistics found that two-earner households, with higher opportunity costs of time, spent more to improve the quality of their leisure than single-earner households.[5] Our results imply that differences extend to their borrowing behavior as well.

Households that had an outstanding mortgage balance were significantly more likely to use consumer debt than renters or households that had completely paid off their mortgage. The relationship between having an outstanding mortgage balance and the probability of consumer credit use is likely a reflection of tax-motivated credit use. Those households with a mortgage interest deduction are more likely to itemize deductions in calculating their federal income tax and can therefore effectively use the consumer credit interest deduction to reduce their taxes and their cost of borrowing. Those households with no mortgage deduction are more likely to use the standard deduction and lose the benefit of tax deductibility of interest paid on consumer loans.

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[5] Consumer Expenditure Surveys, 1982-83. U.S. Department of Labor, Bureau of Labor Statistics, Bulletin 2234 and 2246, March 1986.

Another financial variable affecting the probability of instalment credit use is the amount of liquid assets held by the household. The probability of debt use decreased as the level of liquid assets, and the ability to pay for expenditures with cash, increased. However, at some level of liquid assets, a marginal increase yielded a greater likelihood of using consumer credit. (The coefficient of liquid assets squared was positive and significant.)

An explanation for these results may rest in the tax laws regarding interest income and payments. With the tax shield afforded by the payment of consumer interest, one can shield interest earned on liquid asset investments from taxes. High-income households, who generally have a high marginal income tax rate, may use consumer credit interest to shield interest earned. An alternative explanation is the availability of incentive financing for auto purchases. Buyers with sufficient liquid assets to pay for the purchase may have used credit instead because the cost of credit was lower than their opportunity cost of capital.

Attitudinal Variables. The individuals in this sample were asked if they considered making purchases on the instalment plan a good or bad idea. In the 1983 survey, 44 percent of respondents thought instalment buying was a good idea while 24 percent thought it was a bad idea. In the analysis of probability of debt use, those consumers who believed credit to be a good idea were significantly more likely to use it, relative to those who believe it is both a good and bad idea. Those who thought it was a bad idea were relatively less likely to use instalment debt.

Local Credit Market Conditions. At the time of this study some states had interest rate ceilings in effect. In general, these limits were above the market rate of interest from mid-1982 through early 1983. A measure to control for the more restrictive ceilings was included in the analysis. Since banks' willingness to make consumer loans was low in the year prior to the survey, the effect of rate ceilings on the probability of credit use could also be captured by a measure of consumers' turndown experience (Table 3). Both variables were included in the analysis.

The interest rate ceilings in effect at the time of the survey did not influence the probability that households had instalment debt. But, contrary to expectations, those consumers who had had trouble obtaining credit in the past were significantly more likely to have instalment debt. This is not a surprising result if those who had been turned down were rejected because of having too much credit. That appeared to be the case in that about one-third of those who gave a reason for their rejection indicated that there had been adverse information in their credit report or that they had insufficient income or collateral for the debt they had applied for.

Consumers residing in the South and West were significantly more likely to use instalment debt than those from other regions. Since the multivariate analysis holds other socioeconomic characteristics, and thus the demand for credit, constant, these regional differences were a function of the supply of credit to households. Historically, lenders in the West have been the most aggressive in the financial services industry. And rapid population growth in the West and the South also implies an increasing volume of deposits to be invested by lenders in those regions. Their aggressive marketing of consumer loans may explain the greater likelihood of debt found in the analysis.

To further understand these regional differences in debt use, separate analyses were made of those consumers whose income was in the top 20 percent of the sample, and of those whose income was in the lowest 20 percent. Differences across regions in the probability of debt use were not evident for high income households. For the low-income households, those residing in the South were more likely to use consumer debt. Further analysis of regional debt use is necessary to identify the sources of the differences, possibly considering the type of credit being used by these consumers.

### B. The Amount of Instalment Debt Incurred

The determinants of the amount of leverage-related risk incurred by households yield more insight into their philosophy of debt-use than the examination of whether they use debt. In this analysis, the dependent variables are consumer credit outstandings as a proportion of annual household income, and the repayment rate (monthly payments as a proportion of monthly income). The results of regression analysis for outstandings are presented in Table A.3 in the appendix, while the results for monthly repayments are presented in Table A.4.

In each estimation, the major explanatory variable was household income. The amount of leverage decreased with income, at a decreasing rate. In other words, debt burden did not strictly decrease with income but increased after some high level of income had been achieved. The extent to which a household used leverage, measured by outstandings to income, was not a function of life cycle. Rather, the ratio of outstandings to income was invariant across life-cycle groups. These results suggest that simply having more families in the family-formation stage will not cause the ratio of credit outstanding to income to increase in the aggregate.

The probability of debt-use was higher for young single householders with relatively high income. However, their debt burden measures were not systematically higher than those of their peer group. These households may have had high human capital which made them look like good credit risks. However, that condition was not associated with the amount of leverage they used.

Those households with a mortgage were not only more likely to use credit but owed significantly more credit, relative to income, than those households who had paid off their mortgage or who were renters. This result is consistent with our earlier argument that homeowners with a mortgage deduction have a tax-related incentive to use more consumer credit, holding other things constant.

If households were sensitive to the determinants of their credit capacity and attempted to maximize the benefits of debt use (basically, the tax shield), we would expect to find a positive relationship between their debt burden and liquid assets. And also, we would expect their debt burden to increase with the stability of household earnings. However, neither the coefficient for liquid asset balances or income stability were significant in the analyses of household leverage ratios.

Although attitudes toward credit were a significant determinant of whether a household used credit, the amount of credit repayment or outstandings relative to income was not influenced by attitude. These results imply that having a positive attitude toward credit is not necessarily associated with a tendency to overuse it.

Although the regulation (rate ceiling) variable did not have an influence on whether a household used credit, it was significantly associated with the total amount of credit used relative to income. In those states with low rate ceilings, the ratio of credit outstanding to income was significantly lower than was the case for debt users in nonregulated states. This is consistent with the theory that consumers cannot get all the borrowed funds they need in states with restrictive regulations. And, although the ceilings were not restrictive at the time of the survey, they had been in the years prior to the survey. The historical restrictiveness of rate ceilings resulted in significantly lower debt burdens in those states with restrictive legislation. According to the above result, the removal of rate ceilings would be expected to be associated with an increase in the amount of debt outstanding relative to income for those households using credit.

Our findings that restrictive rate ceilings did not keep households that wanted credit from using it are consistent with those of Peterson. He showed that in Arkansas, where a 10 percent rate ceiling was in effect during the period of his analysis, borrowers were able to get credit from retailers when cash credit was not available.

One of the questions being asked by social scientists and policy makers is whether credit cards cause consumers to spend more or to borrow more. Does the relative ease with which large amounts of credit can be obtained with a credit card endanger the financial stability of households? Or, is household demand for credit invariant to transactions costs associated with obtaining credit? Our results show that the amount of consumer credit used relative to household income is significantly lower, holding other things constant, for families who revolve balances on their credit cards (nonrevolving balances were not included in this analysis.) The implication is that the reduction in transactions costs associated with getting credit had not increased household leverage (in 1983).

This result could be attributed to the fact that the high cost of administering small loans forces lenders to raise the minimum size for closed-end unsecured loans they will provide. Before credit cards were available, or for those not using credit cards, consumers may have had to borrow more unsecured credit than they wanted. With a revolving line, they can borrow a smaller amount and therefore, their use of leverage is reduced. Alternatively, the high interest cost of revolving credit has a negative effect on household demand for credit among households that use credit cards for credit purposes.

## C. Special Topics in Debt Use

Two-Income Households. In our analysis of debt use, two-income households were significantly different from households with only one income earner. Not only were these consumers more likely to use instalment debt, but had a larger amount of outstanding debt relative to income and had higher repayment rates. Given these results, we conclude that one of the demographic trends significantly influencing the amount of consumer credit outstanding relative to income is the increase in the incidence of two-income families.

Interest Deductibility and Debt Use. For consumers who itemize deductions when filing their income tax returns, the tax deductibility of interest expense reduces the cost of instalment debt. Some believe this tax break induces persons to borrow when they otherwise would not and, to discourage excess household leverage, it should be eliminated. We found some evidence that households most likely to itemize deductions (homeowners with a mortgage) were significantly more likely to use debt and used significantly more debt relative to income than renters or homeowners who did not have a mortgage.

The data base provided further information about the relationship between debt use and tax incentives for using debt. Each respondent was asked to indicate what percent of an extra dollar earned would be paid in federal taxes. There were many missing values for the marginal tax rate variable and perhaps little faith should be placed in the accuracy of households perception of their marginal tax rate. This "perceived" marginal tax rate had little affect on the debt choice for the overall sample, a result possibly attributable to the low quality of the data. But, when the relationship between the marginal tax rate and leverage was examined for those households whose income was in the highest 20 percent of the sample, and those whose income was in the lowest 20 percent, some interesting results emerged.

The marginal tax rate perceived by low-income households had no effect on whether they used consumer credit, or on the amount of debt incurred. The tax break would be minimal for these households even if they were to itemize. But, the perceived marginal tax rate of the high-income households did affect their debt use. Holding other factors constant, the higher the perceived tax rate, the lower the probability that the household used instalment debt. For both measures of the degree of household leverage, the coefficient of the perceived tax rate was positive but only marginally significant. As the marginal tax rate increased among those households in the highest income quintile, the amount of leverage increased.

In general, the results of these analyses do not allow us to unequivocally accept the hypothesis that consumer credit use is influenced by the tax deductibility of interest expense. However, there is evidence that, among those who itemize deductions, the probability of debt use and the amount of consumer credit used is significantly higher, holding other things constant, than is the case for borrowers who do not itemize.

## IV. Conclusions

This analysis of factors influencing the probability that a household used instalment debt and the amount used is based on cross-sectional data collected at a time when consumer credit markets were in transition. The transition involved progressing from a regulated local market structure to a deregulated national market. Credit cards and low-rate auto credit were readily available and the supply of credit was high relative to conditions in the early 1980s. The household debt burden was low by historical standards, and the real after-tax cost of credit was very low, especially for those households that itemized deductions.

The cross-sectional analysis shows that the probability of household debt use was highly correlated with socio-demographic variables related to consumption demand but was not significantly associated with the level of household income. Households with the ability to pay cash (positive liquid asset balances) or a negative attitude toward using credit were significantly less likely to use credit. Those with stable incomes and two wage earners were significantly more likely to use credit. And households with a mortgage were more likely to use consumer credit than renters or households that owned their home, suggesting a higher probability of debt use among those taxpayers who itemize deductions.

Households located in states which had relatively tight rate ceilings were not less likely to use consumer credit, holding other variable constant, than their counterparts in states with liberal or no rate regulations.

Holding income constant, the amount of credit used relative to income by debt-using households was not a function of life cycle, attitude toward credit, stability of income, liquid asset balances, or number of dependents. Household debt burden was positively influenced by the existence of a mortgage obligation and having two wage earners in the household. The amount of household leverage was significantly negatively affected by restrictive rate ceilings and was significantly lower for households that used revolving credit.

Based on this analysis, one would expect that deregulation would be accompanied by an increase in the amount of debt used by households using debt, but would not expect to find an increase in the probability of household debt use. Thus, some of the growth in credit outstanding relative to income since 1983 can be attributed to the increased availability of credit in deregulated markets.

Demographic trends such as the increase in the number of families in the early formation years have had a significant positive effect on the incidence of credit use in the population. However, borrowers in that stage of the life cycle do not use a significantly higher amount of credit relative to income, suggesting the baby boomers have not pushed up the leverage measure for households in general.

Households with two wage earners are highly likely to use consumer credit and to have a significantly higher ratio of credit relative to income than families with only one wage earner. The increase in incidence of two-income families has therefore increased the leverage measure for households in general.

Households who carry revolving balances on credit cards use significantly less credit relative to income than other credit using households, holding other things constant. Thus, one might conclude that the ready availability of credit cards has not caused an untoward increase in credit outstanding. However, the use of revolving credit has changed dramatically since 1983. Therefore, our results may not be valid for that changing credit product today.

Consumer credit use is not invariant to tax incentives for using credit. Households that are in a position to take advantage of the tax-deductibility of interest paid on consumer loans are more likely to use consumer credit and use a larger amount of credit relative to income, holding other things constant. These borrowers are, by our definition, homeowners with a mortgage. Under proposed tax reform, they can still get tax deductibility of interest expense if they have sufficient equity in their home. Our results suggest there will be a significant shift to mortgage credit from consumer credit with the passage of the proposed tax reform. The highest income quintile of households owe about 40 percent of total consumer credit outstanding and nearly 90 percent own homes. Their shifting from short-term debt to long-term debt could have a significant effect on total debt used by households. However, a more detailed analysis of the effects of tax reform must be reserved for another forum.

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# APPENDIX

# ECONOMIC AND DEMOGRAPHIC FACTORS ASSOCIATED WITH CONSUMER DEBT USE

Table A.1

Definitions of Variables in Analyses

| Independent Variable | Range of Values |
|---|---|
| Life cycle stage of household head | |
| Young single | 1 = < 45, single, no children |
| Single parent | 1 = any age, single, children |
| Older/working | 1 = ≥ 45, in labor force |
| Older/retired | 1 = ≥ 45, retired, disabled, not in labor force |
| Family form | 0 = < 45, married |
| Mortgage | 1 = owns home with mortgage; 0 otherwise |
| Number in household | xx = number of persons living in household |
| Two-incomes | 1 = second wage-earner in household; 0 otherwise |
| Region of residence | |
| West | 1 = resides in the West; 0 otherwise |
| South | 1 = resides in the South; 0 otherwise |
| Income related measures | |
| Income | xxxxx = 1982 before-tax household income |
| Income squared | xxxxx = income squared |
| Stable income | 1 = at least 1 wage earner is employed in a stable industry, including manufacturing, transportation, communication, utilities, sanitary and professional services, wholesale trade, financial, real estate, insurance and public administration (industry classifications from U.S. Population Census)<br>0 = all wage earners employed in less stable industries, including agriculture, forestry, fishing, mining, construction, retail trade, business and repair services, personal services and entertainment and recreational services |
| Relative income | |
| Yng single-Hi | 1 = young, single, income > median of group; 0 otherwise |
| Sing parent-Hi | 1 = single parent, income > median of group; 0 otherwise |
| Old/Wrk-Hi | 1 = older, working, income > median of group; 0 otherwise |
| Old/Ret-Hi | 1 = older, retired, income > median of group; 0 otherwise |
| FamForm-Hi | 1 = young family, income > median of group; 0 otherwise |

Table A.1 (continued)

| Independent Variable | Range of Values |
|---|---|
| Liquid assets | xxxxx = checking, savings, money market accounts, U.S. Savings Bonds, other federal securities held by household |
| Liquid squared | xxxxx = value of liquid assets squared |
| Attitude towards credit | |
| Good idea | 1 = considers purchase on instalment plan good; 0 otherwise |
| Bad idea | 1 = considers purchase on instalment plan bad; 0 otherwise |
| Local market conditions | |
| Low ceiling | 1 = state had ceiling on consumer credit interest rates of 18 percent or less; 0 otherwise. These states are: AR, CT, FL, IA, KY, LA, MA, ME, MI, MN, MO, NC, PA, TX, WA, WV (4 other states with low rate ceilings were not included in the sample data) |
| Prior rejection | 1 = turned down for amount requested on loan in previous few years; 0 otherwise |
| Card | 1 = household has at least one credit card, and uses credit cards as a source of revolving credit; 0 otherwise |

Table A.2

Mean Values of Variables in Analyses

|  | Mean Value |  |
|---|---|---|
| Independent Variable | All Consumers | Consumers with Debt > 0 |
| Life cycle stage |  |  |
| Young single | 0.12 | 0.12 |
| Single parent | 0.09 | 0.10 |
| Older/working | 0.22 | 0.23 |
| Older/retired | 0.24 | 0.09 |
| Mortgage | 0.37 | 0.51 |
| Number in household | 2.7 | 3.1 |
| Two-incomes | 0.38 | 0.51 |
| Region of residence |  |  |
| West | 0.35 | 0.37 |
| South | 0.17 | 0.17 |
| Income related measures |  |  |
| Income | $25,310 | $28,130 |
| Income squared | $1,374E^{+6}$ | $1,399E^{+6}$ |
| Stable income | 0.50 | 0.66 |
| Relative income |  |  |
| Yng single-Hi | 0.06 | 0.06 |
| Sing parent-Hi | 0.04 | 0.05 |
| Old/Wrk-Hi | 0.11 | 0.11 |
| Old/Ret-Hi | 0.12 | 0.05 |
| FamForm-Hi | 0.17 | 0.24 |
| Liquid assets | $6,104 | $3,814 |
| Liquid squared | $3,730E^{+5}$ | $1,024E^{+5}$ |
| Attitude towards credit |  |  |
| Good idea | 0.44 | 0.51 |
| Bad idea | 0.24 | 0.17 |
| Local market conditions |  |  |
| Low ceiling | 0.46 | 0.46 |
| Prior rejection | 0.11 | 0.14 |
| Card | not in equation | 0.58 |

Dependent Variable

Proportion of households in sample using consumer debt = .51

Mean values of debt burden measures for households with debt > 0:

Ratio of repayments to income = 11.04%

Ratio of outstandings to income = 16.98%

## Table A.3

## Factors Determining the Ratio of Consumer Debt Outstanding to Income
Regression Results on Households with Debt > 0

| Independent Variable | Estimated Coefficients | t-statistic |
|---|---|---|
| Life cycle stage | | |
| Young single | 3.0 | 1.12 |
| Single parent | 3.0 | 1.08 |
| Older/working | 2.4 | 1.24 |
| Older/retired | 2.5 | 0.82 |
| Mortgage | 3.5* | 3.04 |
| Number in household | 0.1 | 0.24 |
| Two-incomes | 2.7* | 1.88 |
| Region of residence | | |
| West | -0.1 | -0.08 |
| South | 3.5* | 2.98 |
| Income related measures | | |
| Income | $-3E^{-4}$* | -4.07 |
| Income squared | $7E^{-10}$* | 3.31 |
| Stable income | -1.1 | -0.88 |
| Relative income | | |
| Yng single-Hi | $-1E^{-2}$ | -0.00 |
| Sing parent-Hi | -2.2 | -0.62 |
| Old/Wrk-Hi | -0.5 | -0.19 |
| Old/Ret-Hi | -6.2* | -1.72 |
| FamForm-Hi | 0.2 | 0.13 |
| Liquid assets | $-1E^{-5}$ | -0.11 |
| Liquid squared | $-3E^{-10}$ | -0.37 |
| Attitude towards credit | | |
| Good idea | 1.9 | 1.64 |
| Bad idea | 0.5 | 0.34 |
| Local market conditions | | |
| Low ceiling | -2.4* | -2.16 |
| Prior rejection | -2.3 | -1.50 |
| Card | -2.4* | -2.20 |
| Constant | 19.9 | 7.44 |

| | |
|---|---|
| adjusted $R^2$ | 0.03 |
| number of observations | 1704 |

*significant at the 95 percent level of confidence, one-tailed test

### Table A.4

### Factors Determining the Ratio of Consumer Debt Repayments to Income Regression Results on Households with Debt > 0

| Independent Variable | Estimated Coefficients | t-statistics |
|---|---|---|
| Life cycle stage | | |
| Young single | 3.7* | 1.93 |
| Single parent | 5.2* | 2.64 |
| Older/working | 0.8 | 0.61 |
| Older/retire | 4.5* | 2.12 |
| Mortgage | 1.1 | 1.33 |
| Number in household | 0.5* | 1.82 |
| Two-incomes | 1.4 | 1.43 |
| Region of residence | | |
| West | 0.8 | 0.71 |
| South | 2.6* | 3.14 |
| Income related measures | | |
| Income | $-3E^{-4}$* | -6.55 |
| Income squared | $8E^{-10}$* | 5.33 |
| Stable income | -0.5 | -0.57 |
| Relative income | | |
| Yng single-Hi | -2.3 | -1.04 |
| Sing parent-Hi | -5.5* | -2.25 |
| Old/Wrk-Hi | 1.2 | 0.69 |
| Old/Ret-Hi | -5.3* | -2.09 |
| FamForm-Hi | 0.6 | 0.45 |
| Liquid assets | $1E^{-5}$ | 0.12 |
| Liquid squared | $-3E^{-10}$ | -0.47 |
| Attitude towards credit | | |
| Good idea | 1.4* | 1.67 |
| Bad idea | 0.2 | 0.18 |
| Local market conditions | | |
| Low ceiling | -0.8 | -1.08 |
| Prior rejection | 0.9 | 0.82 |
| Card | $-2E^{-2}$ | -0.03 |
| Constant | 12.7 | 6.70 |

| | |
|---|---|
| adjusted $R^2$ | 0.08 |
| number of observations | 1681 |

*significant at the 95 percent level of confidence, one-tailed test

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## WORKING PAPER NO. 53

# Liquid Assets And Consumer Credit On The Household Balance Sheet

1987

Krannert Graduate School of Management — Purdue University

# LIQUID ASSETS AND CONSUMER CREDIT ON THE HOUSEHOLD BALANCE SHEET

A. Charlene Sullivan*

## Abstract

In recent years, measures of household indebtedness based on consumer credit outstanding and income moved to levels that suggested a deterioration in the quality of credit outstanding based on consumers' ability to repay debt out of income. At the same time, liquid asset balances held by households were growing rapidly. But there was little evidence with regard to the extent to which consumer credit users held liquid assets. And the comparison of the after-tax cost of credit versus the after-tax return on liquid assets leads one to expect that credit users should not be holding excess liquid asset balances--balances exceeding what is required to meet emergency needs. The purpose of this analysis is to measure the liquid asset holdings of households using consumer credit.

The analysis revealed that in 1983 about 40 percent of credit-using households had sufficient liquid assets to totally repay their consumer

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credit balances. And consumer credit users, who represent 50 percent of total households, held about 35 percent of total liquid assets measured in the survey. These data suggest that policy makers may be mislead in their evaluations of the ability of households to service consumer debts by examining measures that only include current income. However, it is necessary to point out that, historically, consumers using credit did not think it was irrational to hold excess liquid assets at the same time. The fact that high-income consumers, who hold more in liquid assets relative to debts than low-income consumers do, are the source of much of the increase in credit demand in the last several years leads to the conclusion that, in fact, the quality of consumer credit portfolios may have improved rather than deteriorated as the debt to income measure increased [See: Dunkelberg and Worden].

As the fastest growing component of consumer credit outstanding has been unsecured revolving credit, attention in this study was directed to the liquid asset holdings of revolving credit users. Liquid asset balances exceeded, by a large margin, revolving credit balances for most revolving credit users.

In sum, households using consumer credit maintain significant liquid asset balances--to an extent that appears somewhat irrational from the view of the cost of consumer credit relative to the interest rate earned on liquid assets. Further analysis of factors related to the amount of liquid assets held by households using credit is necessary to understand this dimension of household financial management practices.

# LIQUID ASSETS AND CONSUMER CREDIT ON THE HOUSEHOLD BALANCE SHEET

A. Charlene Sullivan

The ability of a household to service its debts typically depends on the level and variability of current income flows in relation to payment obligations coming due. In addition, a household may judge its debt service capacity on the basis of the amount and liquidity of its financial assets. The purpose of this study is to investigate the extent to which households using consumer credit also hold liquid assets. The results of the following comparisons of stocks of consumer debts and liquid assets have implications concerning the quality of consumer credit portfolios and for financial management practices of households.

In the first part of the paper, the position of liquid assets in the household balance sheet is discussed. Trends in liquidity ratios for the household sector in the United States and evidence from survey data of debts and liquid assets in consumer balance sheets are presented. In the second part, survey data collected from a representative sample of U.S. households are analyzed, showing the extent to which borrowers in 1983 held liquid assets and in what relationship to their short-term indebtedness (which excluded mortgage debt currently due).[1] A separate analysis of liquid assets held by households with credit card balances is included here. In the last part of the paper, conclusions and implications of the analyses are presented.

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[1] In some cases the loan balances outstanding may include the total interest due on the loan plus the principal while liquid assets do not reflect interest. This would cause the relationship between liquid assets and consumer credit to be biased downward.

## I. Liquid Assets and Consumer Credit in the Financial Portfolio

Liquid financial assets are those that may be converted easily to cash with little if any price uncertainty. Liquid assets generally yield a low real rate of return but are held to meet emergency financial needs. Households are usually counseled to maintain liquid asset balances equal to between two and six months of after-tax income to cover living expenses in the event of unexpected interruptions in income or unexpected expenses.

The rate of return consumers can earn on liquid assets is normally lower than the unconstrained rate charged on consumer loans. Therefore, at the point in time when the decision to use credit is made, households have little economic incentive to borrow for consumption if they have sufficient balances to pay cash and still have liquid assets above some minimum "safety stock."[2]

The above decision rule assumes that consumers have perfect information about borrowing and lending rates. However, perfect information is not always available. For example, some creditors, namely those who are also selling the product being financed, can quote credit terms that disguise the effective rate being charged for credit. Consumers who cannot evaluate the effective cost of credit when some portion of their interest charge is subsumed in the price paid for commodities (goods and services) may use credit even though they hold liquid asset balances sufficient to pay cash.[3]

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[2] With the Tax Reform Act of 1986 phasing out the deductibility of consumer interest, the cost of using consumer credit while holding sufficient liquid assets was increased significantly for high bracket individuals.

Consumers may have an incentive to borrow for consumption purposes instead of liquidating assets if their liquid assets have been invested in a multiple-period contract at a fixed rate and if market interest rates have subsequently declined substantially. In this case, borrowing costs might be less than the opportunity cost of liquidating the asset.

Finally, yields on some liquid asset accounts fluctuate with market rates whereas rates charged on various types of consumer loans may be limited by ceilings. Consequently, some borrowers may be able to earn an arbitrage profit that results from regulations in the borrowing and/or lending markets.

Once a consumer is past the decision point when a credit obligation is signed, terms of the contract might reduce the borrower's incentive to prepay. For example, if the interest on the loan is accrued by the Rule of 78s, the mathematics of this formula penalizes a borrower if he reduces his total interest payments by prepaying a portion of the outstanding balance. Under these circumstances, a borrower is better off to accumulate excess funds in a savings account until the balance is large enough to prepay the entire loan.

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[3] See Tobin [1956] for other explanations of why consumers might hold excess liquid asset balances at the same time they are using consumer credit.

## A. Aggregate Balance Sheet Information

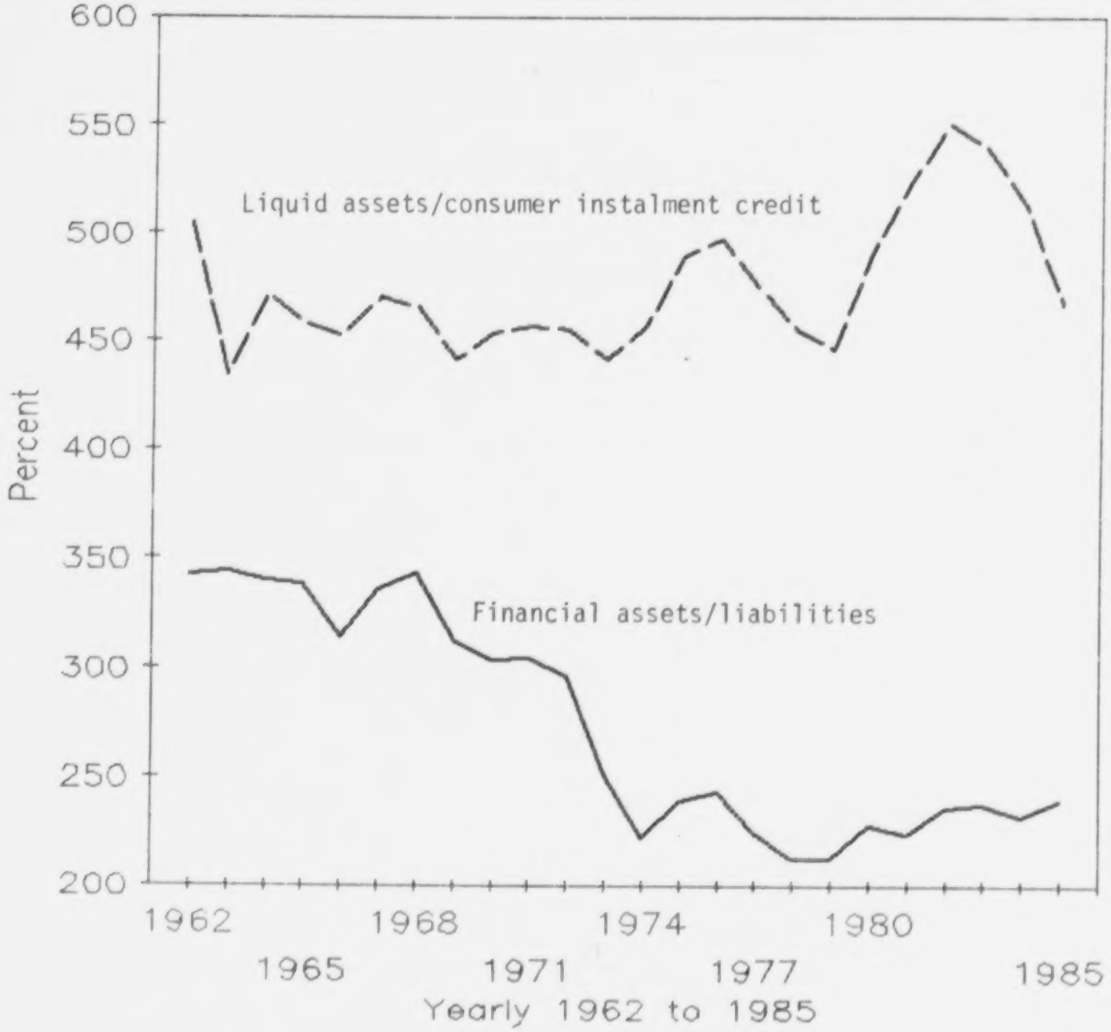
In response to high rates of inflation in the 1960s and 70s, all but the wealthiest households found it advantageous to save by substituting investments in housing and real estate in lieu of traditional financial vehicles (Kane, 1979). The effect of the shift from financial assets to real assets held by U.S. households is clear in the solid line in Exhibit 1. The ratio of financial assets to financial liabilities fell steadily between 1967 and 1974 from about 350 percent to about 225 percent. The aggregate ratio of financial assets to financial liabilities has remained virtually unchanged until 1986 when low interest rates increased the value of total financial assets relative to financial liabilities (not shown on chart).

The ratio of aggregate liquid assets to consumer instalment credit represents a "quick ratio" for the household sector, an indicator of the extent to which short term debts could be paid out of assets which could be converted easily to cash. Between 1963 and 1974, the aggregate relationship between liquid assets and consumer credit in the household sector was steady at about 450 percent. Then between 1979 and 1982, the measure spiked to 550 percent.

In 1983, when the cross-sectional data analyzed in this study were collected, households were holding more liquid assets relative to consumer debts than normal, as evidenced by the quick ratio. Since 1983 consumers have moved into less liquid assets, searching for higher yields on their savings. They have also saved less, investing more in durables that yielded a higher return than liquid assets. Additionally, maturities of

Exhibit 1

Financial Assets and Liabilities for Household Sector



NOTE: Liquid assets include transaction balances, all savings accounts, and U.S. government securities, but exclude other financial assets maturing within one year.

SOURCE: Flow of Funds, Board of Governors of the Federal Reserve System.

auto loan contracts have increased since 1983, enabling consumers to borrow more while keeping monthly debt service obligations low. Finally, consumers who use credit have increased the amount of consumer debt used as interest rate ceilings were abolished in many states.[4] These forces in combination caused the relationship between liquid assets and consumer debts in the aggregate household portfolio to return to a level close to the historical norm by the end of 1985. Therefore, this analysis does not provide a view of the ability of borrowing households to repay consumer debts by liquidating financial assets today. But the analysis does provide information about the financial management practices of debt-using households and the liquidity of households using credit cards for credit purposes.

## B. Cross-Sectional Data

In 1983, a data base which contains a complete inventory of assets and liabilities of a representative national sample of 3,824 households was created. These data provide the opportunity to measure the cross-sectional relationship between liquid assets and consumer credit holdings for households using credit.

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[4] Sullivan and Worden (1986) found that the amount of credit relative to income used by households using credit was significantly lower in states with restrictive rate ceilings.

## Consumer Credit Outstanding

In 1983, 51 percent of households had consumer credit balances outstanding equal to an average total balance of $5,253 (top panel of Exhibit 2). About one-fourth of households had an automobile loan, the average balance for which was $4,296. Twenty-six percent of households had a revolving balance on at least one credit card, with an average total revolving balance on all credit cards of less than $1,000.

Almost two-thirds of debt-using households reported total consumer credit outstanding of less than 20 percent of annual pretax income (bottom panel of Exhibit 2). At the other extreme, about 12 percent of debt-using households had total consumer credit obligations of 35 percent or more of annual pretax income.

## Credit Use and Household Income

Consumer credit is a financial product used most heavily by high-income households. The probability of consumer credit indebtedness increases with annual pretax household income (Exhibit 3). And the bulk of consumer credit measured in the sample was owed by households in the highest income quintile. Forty-two percent of consumer credit outstanding was owed by the 20 percent of the sample with the highest income. Only 4 percent was owed by the 20 percent of the sample with the lowest income. On average, however, credit users in the lowest income quintile had higher debt burdens than those in the highest income quintile. Among indebted households, the average ratio of consumer credit outstanding relative to income was 26 percent for the lowest quintile and 14 percent for the highest quintile.

## Exhibit 2

### Types of Consumer Debt Outstanding, U.S. Households, 1983
(includes all respondents)

| Type of Loan | Percent of Households With This Type of Debt | Average Balance |
|---|---|---|
| Automobile (1st loan)[1] | 25% | $4,296 |
| Home improvement (1st loan) | 5 | 4,966 |
| Other debt-regular payment (1st) | 16 | 2,019 |
| Other debt-regular payment (2nd) | 3 | 1,163 |
| Other debt-irregular payments | 11 | 3,230 |
| Credit card debt | 26 | 905 |
| Lines of credit (other than credit card) | 10 | 3,565 |
| Total consumer credit including credit cards[2] | 51 | 5,253 |

[1] Five percent had a second automobile loan with an average balance of $2,965 and 1 percent had a third loan with an average balance of $3,642.

[2] Credit card balances of those who said they paid the entire balance every month were not included as debt.

### Debt Burden Ratio
Consumer Debt Outstanding to Pretax Household Income

| Ratio | (Percent of Sample) |
|---|---|
| 0.0% | 46.6 |
| 0.1 - 4.9 | 16.2 |
| 5.0 - 9.9 | 8.2 |
| 10.0 - 19.9 | 9.3 |
| 20.0 - 34.9 | 7.5 |
| 35.0 - 49.9 | 3.3 |
| ≥50.0 | 3.0 |
| N.A. | 5.9 |
|  | 100.0% |

SOURCE: 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

## Exhibit 3

## Proportion of U.S. Households Using Consumer Instalment Debt in 1983* And Share of Total Consumer Debt, by Income Quintile in 1982**

| Income Quintile | | | | |
|---|---|---|---|---|
| Lowest | Second | Third | Fourth | Highest |
| A. Percent of households in quintile using consumer debt | | | | |
| 29% | 49% | 53% | 60% | 61% |
| B. Percentage of total consumer debt held by quintile | | | | |
| 4 | 11 | 17 | 26 | 42 |
| C. Average ratio of consumer debt in 1983 to pretax income in 1982<br>(includes only households with consumer credit)<br>(percent) | | | | |
| 26 | 18 | 16 | 16 | 14 |

*Figures include a measure of revolving credit card debt; the convenience use of credit cards is excluded.

**The income breaks for the quintiles were:

| | |
|---|---|
| Lowest | $ 0 - 9,500 |
| Second | 9,501 - 17,090 |
| Third | 17,091 - 24,478 |
| Fourth | 24,479 - 35,462 |
| Fifth | 35,463 and up |

SOURCE: 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

## Liquid Assets

Approximately 12 percent of all households in the survey held no liquid assets (Exhibit 4). Liquid assets included all transaction and savings account balances, balances held in money market funds, and U.S. government securities.[5] More than half of households with liquid assets had balances equal to less than 10 percent of annual income, probably those families whose only liquid asset was a transaction account. At the other end of the distribution, about 10 percent of the sample had liquid asset balances that were equal to 50 percent or more of annual pretax income.

Almost four out of five respondents had at least one checking account (average balance in all such accounts of $1,557). About three out of five had at least one savings account (average balance in all accounts of $2,139). About 14 percent of respondents had a money market fund or money market deposit account.

## Liquid Assets and Household Income

Households in the lowest income quintile were the least likely to own liquid assets (Exhibit 5). The probability of having liquid assets increased with household income and households in the highest income quintile owned the bulk of liquid assets (50 percent) in this sample. In contrast, the lowest income quintile owned 4 percent of total liquid assets.

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[5] In other studies published elsewhere but based on the same 1983 Survey of Consumer Finances, liquid assets included IRA and Keogh accounts.

## Exhibit 4

### Types of Liquid Assets Held and Liquid Assets as Percent of Pretax Income of U.S. Households, 1983
(includes all respondents)

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### A. Liquid Assets of American Households

| Type of Asset | Percent of Households Owning | Average Balance* |
|---|---|---|
| Checking account | 79 | $ 1,557 |
| Savings account | 62 | 2,139 |
| Money market funds or accounts | 14 | 1,614 |
| Total liquid assets | | 5,980 |

### B. Liquid Assets in 1983 to Pretax Household Income in 1982

| Ratio (percent) | Percent of Sample |
|---|---|
| 0 | 12.1 |
| > 0 - 9.9 | 44.2 |
| 10.0 - 19.9 | 18.4 |
| 20.0 - 29.9 | 7.1 |
| 30.0 - 39.9 | 3.4 |
| 40.0 - 49.9 | 2.6 |
| ≥50.0 | 10.3 |
| Missing | 1.9 |
| | 100.0 |

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*The average of total balances in all such accounts held by the household.

SOURCE: 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

Exhibit 5

## Proportion of Households With Liquid Assets and Share of Total Liquid Assets and Income By Income Quintile (includes all respondents)

| | Income Quintile | | | | |
|---|---|---|---|---|---|
| | Lowest | Second | Third | Fourth | Highest |
| A. Percent of households with liquid assets in 1983 | 64 | 85 | 92 | 97 | 99 |
| B. Percentage of total liquid assets in sample held in 1983 | 4 | 10 | 16 | 20 | 50 |
| C. Percentage of total 1982 pretax income by quintile | 4 | 10 | 16 | 23 | 47 |

### Liquid Assets and Consumer Credit

Approximately 35 percent of total liquid assets in the sample was held by the 50 percent of households that used consumer credit. Just as liquid assets and consumer credit balances are concentrated in the high-income households, high-income households that use credit had a great deal more ability to repay debts out of accumulated liquid assets than lower-income households (Exhibit 6). The average ratio of liquid assets to consumer credit ranged between 3.0 times for borrowers in the lowest income quintile up to 8.0 for those in the highest income quintile. These data disguise the fact that some borrowers have no liquid asset cushion. But the incidence of that declines dramatically with income (Panel B, Exhibit 6). One-third of borrowers in the lowest income quintile had no liquid assets. None of the borrowers in the highest income quintile had zero liquid assets. As more than 40 percent of consumer debt outstanding is held by those in the highest income quintile, we conclude that, on average, consumers that use larger amounts of consumer credit had some liquid asset cushion. In the next section we offer further analysis of the liquidity of borrowers.

## II. Analysis of the Liquidity of Borrowers

The ratio of liquid assets to consumer credit may be suggestive of the borrowers' ability to repay debts in the event of an interruption in income. However, the ratio does have shortcomings. First, liquid asset balances are not perfectly liquid if there are substantial interest penalties for early withdrawal. And, securities bought at a discount will not be redeemed at par except at maturity.

Additionally, consumer loans, especially auto loans, can have distant maturities which make the monthly payment obligations low. Therefore, for a given amount of debt outstanding, the borrower with the loan with a long maturity would need less in liquid assets to stay current on the loan during an interruption in income than the borrower with a loan with a shorter maturity. Alternatively, a debtor using revolving credit may have more flexibility to reduce monthly payments (if the borrower is not already making the minimum monthly payment) in the event of a decline in income than a borrower with the same amount of credit but from a closed-end loan. Thus, the former would need less liquid assets than the latter borrower, holding all other things constant. Further, a debtor with a mortgage obligation would need more in liquid assets than a renter, holding all other things constant, to stay current on consumer credit obligations in the event of income interruption. This is due to the fact that housing costs are probably paid first out of income and would be adjusted to a change in income more slowly for an owner versus a renter.

These shortcomings limit the analytical value of the ratio of liquid assets to consumer credit as a measure of the relative liquidity of household borrowers. In the following, the ratio is used simply to analyze the extent to which households simultaneously hold liquid assets and consumer credit and is related to other measures of credit quality.

## Asset/Debt Group Definitions

Households in the sample with consumer credit outstanding were divided into three groups, as indicated below, on the basis of their liquid asset and consumer credit balances.

| Group | Liquid Assets/Consumer Credit | Liquidity Status |
|---|---|---|
| I | 0 | No Liquidity |
| II | >0 ≤ 1 | Low Liquidity |
| III | >1 | High Liquidity |

No Liquidity. Approximately 9 percent of debt-using households in the sample had zero liquid asset balances (Exhibit 6). The "No Liquidity" group held only 4 percent of instalment credit and 3 percent of revolving credit in the sample (Exhibit 7). The average income for the group was $13,330 and the average debt burden (outstanding debt/income) was 17 percent. The average amount of consumer credit owed by this group was $1,866.

The bulk of instalment credit used by the low liquidity group was obtained from retailers, contractors, or auto finance companies (Exhibit 8). And 90 percent of the credit used by this group was instalment credit with only 10 percent being from open-end credit contracts.

Low Liquidity. Approximately 53 percent of credit-using households in the sample held liquid asset balances equal to or less than the amount of total consumer credit owed. This group held 80 percent of consumer instalment credit outstanding and 65 percent of revolving credit

Exhibit 6

## Liquid Assets and Consumer Credit in 1983 By Income Quintile in 1982 (included debt-using households only)

| | Income Quintile | | | | |
|---|---|---|---|---|---|
| | Lowest | Second | Third | Fourth | Highest |
| A. Average ratio of liquid assets to total consumer debt | 3.0 | 5.0 | 6.0 | 4.0 | 8.0 |
| B. Percent of debt-using households with zero liquid assets | 31 | 15 | 8 | 2 | 0 |

SOURCE: *1983 Survey of Consumer Finances*, Board of Governors of the Federal Reserve System.

Exhibit 7

Financial Characteristics of Borrower Groups

| | Groups | | |
|---|---|---|---|
| Financial Characteristics | No Liquidity | Low Liquidity | High Liquidity |
| Percent of total debt users | 8.9% | 52.9% | 38.2% |
| Avg. debt/income | 17.0% | 25.0% | 7.0% |
| Mean debt outstanding | $1,866 | $6,201 | $1,873 |
| Share of debt in sample | 4% | 79% | 17% |
| Avg. monthly debt payments/ monthly income | 16% | 14% | 6% |
| Avg. household income | $13,330 | $27,041 | $33,512 |
| Share of total revolving credit in sample | 3% | 65% | 32% |
| Share of total instalment debt in sample | 4% | 80% | 16% |
| Percent of credit used that is instalment | 90% | 90% | 79% |

SOURCE: 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

## Exhibit 8

## Type and Sources of Consumer Instalment Debt by Group

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### A. Distribution of Consumer Instalment Debt by Sources

| Sources | Group I | Group II | Group III |
|---|---|---|---|
| Commercial bank | 12 | 23 | 22 |
| Savings institutions | <1 | 4 | 5 |
| Credit union | 4 | 13 | 20 |
| Finance or small loan co. | 5 | 5 | <1 |
| Retailer or contractor/dealer | 46 | 24 | 22 |
| Auto finance | 17 | 12 | 11 |
| Other sources | 15 | 19 | 19 |
|  | 100% | 100% | 100% |

### B. Distribution of Instalment Credit Across Groups

|  |  |  |  |  |
|---|---|---|---|---|
| Commercial bank | 2 | 82 | 16 | 100% |
| Savings institutions | 1 | 81 | 18 | 100% |
| Credit union | 1 | 77 | 22 | 100% |
| Finance or small loan co. | 4 | 93 | 3 | 100% |
| Retailer or contractor/dealer | 7 | 79 | 14 | 100% |
| Auto finance | 5 | 80 | 15 | 100% |
| Other sources | 4 | 79 | 17 | 100% |
| Total | 4 | 80 | 16 | 100% |

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SOURCE: 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

outstanding in the sample. Their average income was $27,041 and they had an average debt ratio of 25 percent. The average amount of consumer instalment credit owed by the low liquidity group was $6,201. Only 10 percent of consumer credit used by this group was revolving credit.

About one-half of instalment credit owed by the low liquidity group had been issued by commercial banks and retailers/contractors and dealers. The low liquidity group had obtained a smaller percentage of their instalment credit from auto finance companies, and were more likely to use credit from credit unions, than the zero liquidity group.

High Liquidity. About 38 percent of credit users had liquid asset balances that exceeded their total consumer credit obligations. This group had a low average debt burden (7 percent), owing little more consumer credit, on average, than the zero liquidity group but having a considerably higher average income.

Twenty-one percent of credit used by the high liquidity group was revolving credit. This group owed about 32 percent of total revolving credit outstanding and only 16 percent of instalment credit outstanding. The highly liquid group had obtained about 20 percent of their instalment credit from each of the following sources--banks, credit unions, and retailers/dealers.

This analysis of the liquid asset holdings of households using consumer instalment credit supports the conclusion that most credit users had some liquid assets. And, almost 40 percent of credit users had liquid assets with face amounts greater than their consumer debts. However, the bulk of consumer credit outstanding was owed by households with liquid asset balances equal to only a portion of their total consumer debt obligation.

## Historical Comparisons

Historically, a large percentage of households using consumer credit has maintained significant liquid asset balances. A 1959 study of personal debts and liquid assets showed that at a point in time 43 percent of households held both debt and liquid assets. One-third of debt-using households had sufficient liquid assets to repay all their outstanding consumer debts.[6] In 1967, over two-thirds of consumers responding to a questionnaire viewed the simultaneous use of consumer credit and holding of liquid assets as rational behavior.[7]

One of the expected effects of Truth in Lending legislation (1968) was that consumers would have better information about the cost of credit and would substitute cash payment for credit use when the rate differential for liquid assets and consumer credit suggested that such behavior was optimal. The present study sheds light on whether Truth in Lending had that effect on consumers' decisions. By historical standards, households using consumer credit were not less likely to hold liquid assets in 1983 but were more likely to do so. Of course, the aggregate ratio of liquid assets to consumer credit was very high in 1983 and perhaps the cross-sectional data collected then reflect special circumstances of that period rather than a trend in household behavior.

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[6] "1959 Survey of Consumer Finances," Federal Reserve Bulletin, 45 (July 1959), p. 721.

[7] George Katona et al., 1967 Survey of Consumer Finances, Ann Arbor Survey Research Center, University of Michigan, 1968, p. 145.

One condition that could have made borrowers in 1983 more liquid (in terms of financial assets) than they might be today arose from the general restrictions on the availability of consumer credit in the several years before 1983 due to rate ceilings. The increase in availability of instalment credit since 1983 has probably resulted in putting more credit in the portfolios of consumers with less liquidity. Another factor influencing the high level of liquidity of borrowers in 1983 was the high available yields on liquid assets. Since 1983, those yields have declined, probably causing some liquid assets to be reinvested in more risky investment opportunities.

## Liquidity Ratio and Other Indicators of Credit Quality

The liquid asset to debt measure increased with education, those having the least education also holding the least liquid assets relative to debt, on average. Education is positively associated with the marketability of human capital. However, households with a low education achievement level did not hold more liquid assets to insure themselves against the consequences of job loss.

Homeowners held more, on average, in liquid assets relative to consumer credit than renters. This result was expected, given the greater adverse consequences of income interruption for homeowners relative to those with less at stake in terms of financial investment in housing.

Finally, households who had been rejected for credit in the past held significantly less in liquid assets relative to consumer credit than households that had not been turned down. Perhaps a justification for borrowers' holdings of liquid assets is to insure their ability to access credit markets at reasonable rates. "The borrower with no liquid assets is willing to pay a high rate for credit," according to the 1972 Report of the National Commission for Consumer Credit.

## III. The Liquidity of Credit Card Users

The rapid growth of consumer debt outstanding since the beginning of the current business cycle (November 1982) has been driven partially by the expansion of revolving credit. Some of that growth may be attributed to the increased use of multipurpose cards for convenience in transactions. But much of the increase has been attributed to deregulation of interest rates and the associated rapid increase in the availability of unsecured credit.

The risk of loss in a portfolio of unsecured credit may be particularly sensitive to the liquid asset cushion maintained by borrowers using unsecured credit. In the case of unsecured credit, the lender's claim is against the future income of the borrower. The debtor, in the event of a decline in income, has the flexibility to cut the amount of the monthly payment to the minimum payment required with credit cards if he or she is not already paying the minimum. Even so, the proceeds from liquid assets would also be needed to cover living expenses and service other debts.

Under the assumption that the borrower's liquid asset balances are an important determinant of the risk of an unsecured claim, the ratio of liquid asset balances to total outstanding revolving credit balances for all cardholders in the sample who reported that they used their credit cards as a source of credit (43 percent of cardholders) was calculated.[8]

Less than 4 percent of revolving cardholders held no liquid assets, as compared to 9 percent of credit users in general. This contrast suggests that credit card users in 1983 were of better average credit quality than credit users in general, a condition that has likely disappeared since 1983 (Exhibit 9). About 26 percent reported positive liquid asset balances that were less than their total revolving credit balances. One-third of revolvers owned liquid asset balances that were between one and nearly five times as large as their total revolving credit balances. Almost two of every five revolvers owned liquid asset balances that exceeded the level of credit card outstandings by a multiple of five or more.[9]

The average credit card balances revolved by those households with liquid assets less than their total credit card balances was $1,385. The average balances for the groups with the higher coverage ratios were $989 and $416 respectively. Given the high cost of revolving credit, it is not surprising that those borrowers with liquid assets use less of this type of

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[8] These data are not representative of the liquidity of cardholders but of the liquidity of revolvers. Canner and Cyrnak found that as the ratio of liquid assets to income increased, the probability that a household paid off its card balances each month increased.

[9] Tobin [1956] suggested that consumer insensitivity to borrowing costs could cause credit users to avoid depleting liquid assets by using credit.

Exhibit 9

## Liquid Asset Balances Relative to Revolving Credit Balance (in percent for revolvers only)

| Liquid Assets/Revolving Credit<br>(coverage ratio) | |
|---|---|
| No liquid assets | 3.4% |
| > 0 < 100% | 26.1 |
| 100 - 499% | 32.8 |
| 500% or more | 37.7 |
| | 100.0% |

SOURCE: 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

credit relative to those borrowers with no liquid assets. Forty-one percent of the total revolving credit in the sample was held by the approximately 30 percent of revolving cardholders who had very low or no liquid asset balances.[10]

## Coverage Ratio and Credit Risk Characteristics

Creditworthiness is a multidimensional quality, not depending solely on the stated dollar value of income and financial assets which might be available to repay the lender. Therefore, other demographic and economic characteristics of the cardholders were analyzed. Revolving cardholders were separated into three groups on the basis of calculated coverage ratios. The separation was made to assess the extent to which cardholders with low liquid asset balances relative to credit card balances had other characteristics that would also suggest they were relatively more risky borrowers. In general, it appeared that cardholders with low coverage ratios were drawn from the high risk segment of the borrower population.

One indicator of the credit risk of a borrower is the amount of credit owed relative to income. For revolving cardholders, borrowers with liquid balances of less than their total credit card balances were more likely than other revolving credit users to have total consumer credit that exceeded 50 percent of pretax income--which, by standards of the total group (Exhibit 2), is a high debt ratio (Exhibit 10).

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[10] Most of the nonrevolvers indicated that their total outstanding credit balance on credit cards was zero. Therefore, we cannot generalize the 41 percent figure to national statistics for revolving credit outstanding because balances held by nonrevolvers are included in the latter.

Exhibit 10

## Liquidity of Credit Card Holders (in percent, for revolvers only)

| | Coverage Ratio | | |
|---|---|---|---|
| Total Consumer Instalment Credit<br>Pretax Household Income | <100%* | 100-499% | >500% |
| < 20% | 60.0 | 69.5 | 83.8 |
| 20-50% | 31.7 | 24.2 | 13.8 |
| > 50% | 8.1 | 6.2 | 2.5 |
| | | $x^2$ = 46.54** | |
| Percent recently turned down for consumer credit | 18.7 | 15.5 | 9.7 |
| | | $x^2$ = 12.33** | |
| Education of Household Head | | | |
| <High school | 17.8 | 10.4 | 10.9 |
| High school diploma and some college | 38.6 | 33.1 | 37.8 |
| College degree | 43.6 | 56.4 | 51.2 |
| | | $x^2$ = 16.88** | |
| Income Quintile | | | |
| Lowest | 8.9 | 5.7 | 4.2 |
| Second | 24.3 | 13.9 | 10.3 |
| Third | 21.7 | 23.1 | 22.2 |
| Fourth | 25.4 | 27.0 | 29.4 |
| Highest | 19.4 | 30.0 | 33.6 |
| | | $x^2$ = 38.93** | |

* Includes those with zero liquid assets
**Significant at 95 percent level of confidence

SOURCE: 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

Cardholders with the low coverage ratio were more likely to indicate that they had been turned down for consumer credit in the past few years than members of the other two groups. About 19 percent of cardholders in the lowest coverage group had been turned down for credit compared to about 10 percent of the group with the highest liquid assets to credit card balance ratio. For all credit users in the sample, the probability of having been turned down for credit recently was 16.8 percent.[11] The distribution of debt burden and turndown experience was significantly different across the three groups of cardholders.

Educational level is generally correlated with income and probably is correlated with a borrower's options in the event of a cutback in income. Education may also be related to the quality of medical and disability coverage that the borrower has (not considering credit insurance). The three groups of borrowers differed significantly in terms of education level attained. The low coverage group was more likely to have not finished high school; it was less likely to have a college degree relative to the other two groups.

As expected, the members of the group with the lowest coverage ratio were more likely to come from the two lowest income quintiles in the sample than were the cardholders with higher coverage ratios. Thirty-three percent of the low coverage group had annual household income below $17,090 (two lowest income quintiles) while only 19 and 14 percent, respectively, of the other two coverage groups fell into those income groupings.

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[11] 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

## Coverage Ratio and Multiple Bank Card Ownership

One condition that has continued to change in the years since the survey data were collected is the availability of bank credit cards. In the 1983 survey few cardholders held more than two bank cards (6.8 percent). Today by contrast, a large contingent of households have two or more bank cards even though periodic membership fees have become more prevalent.

The data were analyzed to determine whether households with low liquid asset balances, relative to their total credit card outstandings, were more likely to hold two or more bank cards under the market conditions of 1983. The analysis showed that cardholders in the two lowest coverage groups were more likely to have more than one bank card in 1983 than those cardholders with high liquid asset balances relative to credit card debt. While only 36 percent of the group with the highest coverage ratio had two or more cards in 1983, 44 percent of each of the other two groups did so.

The credit card is ideally suited for households that find it difficult to save in advance for small purchases. The results of the analyses of credit risk characteristics suggest that such customers are high risk borrowers. That those cardholders may have accounted for much of the growth in revolving credit outstanding in the last three years may help to explain why lenders have not received more pressure from consumers to cut interest rates. These findings may also help to account for the dramatic growth in delinquencies and losses in bank card portfolios during recent years.

## IV. Summary and Conclusions

This analysis of the liquid asset holdings of a sample of households using consumer credit revealed that about two in five borrowers had liquid assets balances that were greater than the total of consumer credit owed, and less than one in ten borrowers had zero liquid assets.[12] Most borrowers had some liquid assets but not enough to repay all debts. Highly liquid borrowers had a greater percentage of their total consumer credit in the form of revolving credit than less liquid borrowers. This suggests that the credit decision of highly liquid borrowers might have been based on convenience rather than a careful weighing of the cost of credit versus the opportunity cost of drawing down savings. Much of the instalment credit used by highly liquid borrowers came from banks and credit unions where such households might have had opportunities to borrow, using accumulated savings as collateral or to get a low price for credit because of a deposit relationship they had with the lender.

Turning to credit cardholders that revolve, 70 percent of households using the credit feature of credit cards in 1983 held enough accumulated liquid asset balances to pay off their accumulated credit card balances. The balance of revolvers owed more on their credit cards than they held in total liquid assets. Such revolvers had high debt burdens in general, were more likely than more-liquid revolvers to report that they had been turned down for credit in the recent past, and were more likely to have less than a high school education.

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[12] Note that mortgage credit and other liabilities currently due are excluded.

The results of this analysis of the liquid assets held by households using consumer credit have several policy implications. First, historically, a significant percentage of households using consumer credit have owned relatively large liquid asset balances. Despite the enactment of Truth in Lending legislation, a large contingent of borrowers in 1983 maintained liquid asset balances exceeding the amount they had borrowed for consumption purposes. Although it may not appear as economically rational behavior, many consumers apparently borrow money to avoid depleting accumulated liquid balances, especially if their credit needs are small.

Second, the credit card is priced as a source of credit to appeal to households with low liquidity who, as it turns out, also have high credit risk. However, most revolvers on credit cards are highly liquid relative to the amount owed on their cards. As yields on savings decline, the cost of revolving credit (assuming it does not decline with savings yields) for cardholders with liquid assets increases relative to their opportunity cost of drawing down liquid assets. Because a significant percentage of revolving credit is held by cardholders who are high risk, many lenders have been hesitant to cut rates charged on credit cards. Therefore, cardholders with ample liquid assets seek lower credit rates by engaging in more credit shopping or by supporting attempts to regulate rates. In the long run, the liquid borrower will not pay the same rate for credit that the borrower with no liquid assets is willing to pay. New products, segmentation strategies, or both will be developed by card issuers as the opportunity cost of drawing down liquid assets declines.

Finally, in discussions of the financial strength of households, many economists have viewed the increase in consumer credit outstanding relative to income with concern. Others have interpreted the high level of liquidity of the household balance sheet as a positive condition which should reduce concern about the ability of households to service its debts. But doubts were expressed about the overlap of borrowing households and households holding liquid assets. This analysis demonstrated that households using consumer credit frequently own large liquid asset balances (relative to credit owed). In fact, approximately 35 percent of liquid assets in this sample was held by the 50 percent of households that used consumer credit. Growth in credit outstanding that results from reducing credit standards is likely to put relatively more credit on the balance sheets of low liquidity households. Thus, the 1983 data probably are not a faultless indicator of credit quality in 1986. However, it is important to note that a relatively stable proportion, between 30-40 percent of consumer credit users, maintain liquid asset balances sufficient to totally repay their consumer debts. Thus, this analysis supports the view that the debt service capacity of households has improved as the aggregate liquidity of the household sector increased. Further analysis is needed to understand the relationship between the liquidity of borrowers and the types and terms of consumer credit used, what the effects of tax reform might be and the role liquid assets play in the credit shopping process.

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## EXECUTIVE SUMMARY

# LIQUID ASSETS AND CONSUMER CREDIT ON THE HOUSEHOLD BALANCE SHEET

A. Charlene Sullivan[*]

The ability of a household to service its debts typically depends on the level and variablility of current income flows in relation to payment obligations coming due. In addition, a household may judge its debt service capacity on the basis of the amount and liquidity of its financial assets. The purpose of this study is to investigate the extent to which households using consumer credit also hold liquid assets.

## I. Definitions and Trends

Liquid financial assets are those that may be converted easily to cash with little if any price uncertainty. Liquid assets generally yield a low real rate of return but are held to meet emergency financial needs. Households are usually counseled to maintain liquid asset balances equal to between two and six months of after-tax income to cover living expenses in the event of unexpected interruptions in income or unexpected expenses.

The rate of return consumers can earn on liquid assets is normally lower than the unconstrained rate charge on consumer loans. Therefore, at the point in time when the decision to use credit is made, households have little economic incentive to borrow for consumption if they have sufficient balances to pay cash and still have liquid assets above some minimum "safety stock."

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The ratio of aggregate liquid assets to consumer instalment credit represents a "quick ratio" for the household sector, an indicator of the extent to which short term debts could be paid out of assets which could be converted easily to cash. Between 1963 and 1974, the aggregate relationship between liquid assets and consumer credit in the household sector was steady at about 450 percent. Then between 1979 and 1982, the measure spiked to 550 percent.

In 1983, when the cross-sectional data analyzed in this study were collected, households were holding more liquid assets relative to consumer debts than normal, as evidenced by the quick ratio. Since 1983 consumers have moved into less liquid assets, searching for higher yields on their savings. They have also saved less, investing more in durables that yielded a higher return than liquid assets. Additionally, maturities of auto loan contracts have increased since 1983, enabling consumers to borrow more while keeping monthly debt service obligations low. Finally, consumers who use credit have increased the amount of consumer debt used as interest rate ceilings were abolished in many states. These forces in combination caused the relationship between liquid assets and consumer debts in the aggregate household portfolio to return to a level close to the historical norm by the end of 1985. Therefore, this analysis does not provide a view of the ability of borrowing households to repay consumer debts by liquidating financial assets today. But the analysis does provide information about the financial management practices of debt-using households and the liquidity of households using credit cards for credit purposes.

## II. Conclusions of Analysis

About two in five borrowers had liquid assets balances that were greater than the total of consumer credit owed, and less than one in ten borrowers had zero liquid assets. Most borrowers had some liquid assets but not enough to repay all debts. Highly liquid borrowers had a greater percentage of their total consumer credit in the form of revolving credit than less liquid borrowers. This suggests that the credit decision of highly liquid borrowers might have been based on convenience rather than a careful weighing of the cost of credit versus the opportunity cost of drawing down savings. Much of the instalment credit used by highly liquid borrowers came from banks and credit unions where such households might have had opportunities to borrow, using accumulated savings as collateral or to get a low price for credit because of a deposit relationship they had with the lender.

Turning to credit cardholders, 70 percent of households using the credit feature of credit cards in 1983 held enough accumulated liquid asset balances to pay off their total credit card balances. The balance of revolvers owed more on their credit cards than they held in total liquid assets. Such revolvers had high debt burdens in general, were more likely than more-liquid revolvers to report that they had been turned down for credit in the recent past, and were more likely to have less than a high school education.

The results of this analysis of the liquid asssets held by households using consumer credit have several policy implications. First, historically, a significant percentage of households using consumer credit have owned relatively large liquid asset balances. Despite the enactment of Truth in Lending legislation, a large contigent of borrowers in 1983 maintained liquid asset balances exceeding the amount they had borrowed for consumption purposes. Although it may not appear as economically rational behavior, many consumers apparently borrow money to avoid depleting accumulated liquid balances, especially if their credit needs are small.

Second, the credit card is priced as a source of credit to appeal to households with low liquidity who, as it turns out, also have high credit risk. However, most revolvers on credit cards are highly liquid relative to the amount owed on their cards. As yields on savings decline, the cost of revolving credit (assuming it does not decline with savings yields) for cardholders with liquid assets increases relative to their opportunity cost of drawing down liquid assets. Therefore, cardholders with ample liquid assets seek lower credit rates by engaging in more credit shopping or by supporting attempts to regulate rates. In the long run, the liquid borrower will not pay the same rate for credit that the borrower with no liquid assets is willing to pay. New products, segmentation strategies, or both will be developed by card issuers to retain the highly liquid borrower as the opportunity cost of drawing down liquid assets declines.

Finally, in discussions of the financial strength of households, many economists have viewed the increase in consumer credit outstanding relative to income with concern. Others have interpreted the high level of liquidity of the household balance sheet as a positive condition which should reduce concern about the ability of households to service their debts. But doubts were expressed about the overlap of borrowing households and households holding liquid assets. This analysis demonstrated that households using consumer credit frequently own large liquid asset balances (relative to credit owed). In fact, approximately 35 percent of liquid assets in this sample was held by the 50 percent of households that used consumer credit. Growth in credit outstanding that results from reducing credit standards is likely to put relatively more credit on the balance sheets of low liquidity households. Thus, the 1983 data probably are not a faultless indicator of credit quality in 1986. However, a relatively stable proportion of consumer credit users, between 30-40 percent, maintain liquid asset balances sufficient to totally repay their consumer debts. Thus, this analysis supports the view that the debt service capacity for households has improved as the aggregate liquidity of the household sector increased. Further analysis is needed to understand the relationship between the liquidity of borrowers and the types and terms of consumer credit used.

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## WORKING PAPER NO. 54

# Shopping For Consumer Credit: Implications For Market Efficiency

1987

Krannert Graduate School of Management – Purdue University

# SHOPPING FOR CONSUMER CREDIT:
# IMPLICATIONS FOR MARKET EFFICIENCY

Debra Drecnik Worden and A. Charlene Sullivan*

## Abstract

One function of the Truth in Lending Act was to promote consumer shopping for credit by providing standardized disclosure of terms. A product of this shopping behavior, and the resulting competition among creditors, should be that borrowers of similar default risk would pay the same price for credit, holding other terms of the credit contract constant. In other words, the market for consumer credit would be allocationally efficient.

The purpose of this study is to provide evidence regarding the credit shopping behavior of consumers and its implications for market efficiency and public policy. The characteristics of shoppers and nonshoppers are compared, as well as the type of creditors they choose. The results indicate that, for some consumers, current developments in credit markets, including the Tax Reform Act of 1986, should increase the expected net

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benefits of credit shopping and, thus, its incidence. Evidence of consumers' sensitivity to the incentive compaigns of auto finance companies and their insensitivity toward credit card interest rates is provided. Finally, it is concluded that regulations requiring full disclosure of credit terms and encouraging price competition among creditors for all risk classes of borrowers, as well as education of these borrowers about available alternatives, appear to be the optimal public policy to promote consumer credit market efficiency.

# SHOPPING FOR CONSUMER CREDIT:
# IMPLICATIONS FOR MARKET EFFICIENCY

Debra Drecnik Worden and A. Charlene Sullivan

## I. Introduction

In a perfectly efficient financial market the price of a financial contract is a function of its risk. According to classical theory, this situation prevails when buyers have equal access to complete and costless information about the costs and benefits of competing contracts from a variety of sellers.

There are many barriers which potentially contribute to (price) inefficiency in the market for consumer credit. The first is that the market is generally local in nature so that the price for credit may vary across borrowers because of differences in local market competition. The second is that information reflecting the credit risk of the borrower may be proprietary or incomplete. Finally, the complete array of terms for credit contracts is so complex and varied that the consumer may not be able to shop effectively for credit.

Technological advances and deregulation are setting the stage for improvements in the price efficiency of the consumer credit market by diminishing the first two barriers. Technology has reduced the cost of obtaining information about borrowers' credit risk. It has also widened consumer choice with a variety of new products and services provided in a national market. By increasing inter- and intrastate competition among creditors, deregulation has facilitated the transfer of funds from areas of excess supply to areas of excess demand. Further, deregulation of interest rates on deposit and credit products permits more explicit pricing of consumer credit.

One function of the Truth in Lending Act (1968), legislation which provides for standardized disclosure of terms so that consumers can compare the price of various consumer credit contracts, was to diminish the third barrier to market efficiency. A reduction in the dispersion of interest rates quoted to a given individual for homogeneous contracts should follow from legislation which encourages comparison shopping for consumer credit. In other words, borrowers of similar credit risk would be charged the same interest rate, holding other terms of the contract constant.

Although market efficiency is dependent upon the existence of a variety of sellers, unregulated prices, and available information--consumers' shopping behavior is a key variable in the equation. Since they differ in the value derived from it, not all consumers comparison shop. In his classic work on the economics of search, Stigler (1961) proposed that buyers seek information about alternatives in the marketplace only to the point when the additional costs of doing so equal the additional benefits. Since perceived costs and benefits vary across buyers, some will engage in more search activity and be more informed about available prices than others. The existence of less informed buyers allows some sellers to charge higher prices; in other words, it adds to the level of price dispersion and market inefficiency.

To the extent that less informed consumers are not paying the lowest price for credit, given their credit risk, the credit market may be perceived as "unfair." Although variation in consumer shopping behavior is due to personal differences in perceived costs and benefits, the extent to which shopping for credit is discouraged by discriminatory credit screening practices, incomplete information, or inadequate competition is a matter of public policy.

The purpose of this study is to provide empirical evidence of the credit shopping behavior of consumers and its implications for the efficiency of the consumer credit market and for public policy. The data analyzed were collected in a survey of a national sample of households. The financial and socioeconomic characteristics of consumers who shopped before committing to a credit agreement are compared with those who did not. The source of credit is examined in conjunction with whether a borrower sought information on credit terms. Shopping behavior and credit source are also compared across geographic regions, examining regulatory effects with respect to competition and usury ceilings.

Deregulation and technological advances, as well as more complete and standardized disclosure of credit terms, has promoted the efficiency of the consumer credit market. However, the complexity of the credit product, high costs of shopping, and/or low perceived benefits are reflected in a low incidence of comparison shopping for credit among borrowers. This is particularly true for low income households, for individuals who perceive they have high default risk, for borrowers with established relationships at creditors, and for persons needing small amounts of credit.

The implication of these results, from a public policy viewpoint, is that an effective campaign against reregulation of credit interest rates and barriers to competition must contain components which facilitate the credit shopping behavior of all borrowers. As yet, the very consumers who could potentially benefit the most from deregulation may not have realized those gains because of credit search practices which were learned in a regulated, local market environment.

## II. Literature Review

Stigler (1961) formulated several propositions about individuals' search behavior. One of these was that the extent to which consumers comparison shop among alternatives increased as the cost of doing so declined, holding all other things constant. Thus, theoretically, the standardized disclosure of credit terms legislated by Truth in Lending should increase the amount of shopping for consumer credit.

Since Truth in Lending was implemented in July 1969, several studies have investigated its effectiveness by examining the credit shopping behavior of consumers. Day and Brandt (1973) believed that the credit decision should be considered in the context of the purchase decision. Their study began with an analysis of purchase planning and continued with the amount of store (or dealer) shopping, brand (or model) consideration, and product information seeking through media advertising, friends, salesmen, etc. Finally, they evaluated the amount of credit information consumers sought and the number of alternative credit sources considered.[1]

Day and Brandt's analysis indicated that the majority of consumers in their sample were deliberate in making purchase decisions, with 82 percent planning the purchase for several weeks or more. Although search for product information through sources such as media advertising, Consumer Reports or friends was minor (50 percent used only one source), about 75 percent of the consumers shopped at more than one store (or dealer) or considered more than one brand of product. A large group of consumers (25 percent of the sample) sought no product information and shopped only one brand and store.

Analysis of the determinants of the amount of store shopping indicated that consumers who had prior experience with a retailer shopped at significantly fewer stores for the purchase of a household durable. In contrast, prior experience did not influence the number of dealers shopped for a car purchase. Those consumers who were interested in finding the best price shopped more extensively for both household durables and cars. Whether or not they used credit for the purchase did not influence the amount of product shopping.

Consumers in the Day and Brandt sample expended less energy for the credit decision than they did for the purchase decision. Of those who financed their purchases with credit, only 27 percent sought information about credit sources and 20 percent considered alternative sources.[2] These percentages were higher for automobile purchases (which typically entail a larger amount of credit) and lower for household durables.

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[1] The data for the Day and Brandt study were taken from a sample of California households in 1970. In order to examine the alleged credit problems of minorities, 150 black households were interviewed in addition to a randomly selected sample of 650. Potential bias should be considered when extending the findings of the study to the national population.

The Brandt-Day study also found evidence that Truth in Lending disclosure was of little use to the low-income and minority consumers in the sample because their access to credit was more limited. These survey respondents were more likely to borrow from retailers and finance companies than were higher-income households, and they relied more heavily on dealer-arranged credit. Further, low-income minority credit users were more pessimistic than other consumers about the willingness of other credit sources (commercial banks and credit unions) to lend to them.

Given their overall results, Day and Brandt concluded that consumers in general were aware that some sources and types of credit were more costly than others. But, given that the finance charge is only a small portion of the total purchase price of a product, most buyers would continue to allocate their time and effort to product-related decisions rather than to credit decisions.

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[2] The overall amount of search among credit sources may be understated because it only measured inter-type search, for example, retailers versus banks. Shopping within each type of credit source was not counted.

The next data on consumers' credit shopping behavior were collected in 1977.[3] Durkin and Elliehausen (1977) found that consumers' awareness of annual percentage rates (APRs) had increased since 1970, but credit shopping did not increase accordingly. Of those consumers who had $200 or more of closed-end instalment credit outstanding at institutional sources, only 25 percent had shopped at other creditors or obtained information about other credit terms. Multivariate analysis of the determinants of search activity was not performed, but the data indicated that the propensity to search for information about credit increased with consumers' education and income levels.

Durkin and Elliehausen determined that the selection of a type of creditor was based on perceived relative costs. But, once a particular creditor was known to be satisfactory, familiarity became the major determinant in future transactions.

Using data collected in 1979 across four local credit markets that differed significantly in their regulatory environment, Peterson and Black (1984) found that among respondents who had recently borrowed $200 or more, only 21 percent had comparison shopped for credit.[4] Multivariate analysis supported the proposition that search activity increased with perceived benefits. The propensity to credit shop increased with the size of the loan and potential interest savings. Consumers were less likely to shop if being comfortable with a creditor or quick turn around with little paperwork were the most important factors in obtaining credit. And, borrowers with previous experience at a creditor were less likely to search. A 10 percent usury ceiling was in force in one of the markets surveyed (Arkansas). Consumers in this restricted market were less likely to shop for credit terms, supporting the hypothesis that search decreased with price variability.

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[3] The 1977 Consumer Credit Survey, Board of Governors of the Federal Reserve System.

[4] The 1979 National Science Foundation Consumer Credit Survey conducted by the Credit Research Center.

As mentioned above, Day and Brandt found that low-income minority borrowers used retailer and dealer arranged credit more frequently and made little use of credit information. Peterson and Black derived similar conclusions from their model. They asserted that the propensity to search and to borrow from conventional low-cost creditors (commercial banks and credit unions) decreased as consumers perceived a higher probability of default. The results of their analysis indicated that consumers with greater subjective default risk, measured by income and loan rejection experience, were significantly more likely to have borrowed from higher-cost credit sources (defined as retailers, dealers and finance companies). And, those with high income were more likely to search.

An inverse correlation between credit shopping and default risk has also been suggested in an analysis of households in financial distress. In an investigation of those factors that determine a households' ability to meet debt repayment commitments, Dessart and Kuylen (1986) found evidence that the decision-making behavior of households with more than one loan outstanding influenced the likelihood of getting into financial distress. Financial difficulty was encountered more frequently among borrowers (with multiple consumer debts) who had not considered alternative credit sources and forms of credit than among those who had. Further, borrowers who did not consider the terms of the contract and interest rate to be important were more likely to have trouble repaying debt commitments. The implication is that multiple debt contracts which are taken on "casually" may be a leading cause of financial distress.

One other recent study examined the economics of consumer search. Joel Urbany's (1986) research is based on experimental data collected to test several of Stigler's propositions of search theory: 1) expected benefits from search (and so the extent of search) are positively related to the dispersion in prices of the commodity, and 2) the extent of search is negatively related to its cost, holding all other things constant. Urbany asserts that Stigler assumes that buyers have only some abstract notion of the range and distribution of prices, and are ignorant as to which sellers offer various prices. But, once this assumption is relaxed, the effect of prior information and experience on search behavior must be considered.

Urbany's experimental design involved consumer shopping behavior for the purchase of several major consumer products. Through use of personal computers, buyers simulated purchases, while Urbany manipulated price dispersion, search costs and uncertainty (prior knowledge). In each simulation, the objective of the search was to find a lower price.

In support of his conjecture, Urbany found that reduced costs increased search only when there was little price dispersion and consumers had little prior knowledge. Thus, he concludes that the factors which are generally believed to affect search behavior--cost and benefits--may not be theoretically consistent in their impact if the consumer's prior experience and knowledge is not considered.

## III. Survey Findings

### A. The Data

The data for the study derive from a nationwide survey of 3,824 consumers conducted in the early half of 1983.[5] Of these consumers, 1,658 reported that they had made a purchase of $500 or more in the past twelve months, with 532 financing a portion of that purchase with a closed-end consumer loan.[6] The loan may have been paid off by the time of the survey, but since it had been recently initiated, most respondents should have been able to recall their behavior when the debt was incurred. To determine if the consumers had done any comparison shopping, they were asked, "Before you decided the way you would buy this (item), did you try to get any information about other creditors or credit terms?"

The source of the loan revealed further insight into the borrower's behavior. An individual who did not shop but borrowed from his credit union can be evaluated differently than the nonshopper who obtained financing from the retailer selling the product purchased. Respondents did not generally provide valid data on the annual percentage rate paid on their loans, so a method was employed to classify the credit source as either a "high-rate" or a "low-rate" creditor. Commercial banks, thrift institutions, and credit unions were classified as providers of low interest rate consumer credit, while finance and loan companies, stores, dealers, and contractors were included in the high interest rate category. Since auto finance companies were offering below market incentive rates on new purchases just prior to and during the time of the survey, consumers who had financed a new car from them during that period were classified as using "low-rate" creditors.[7] Consumers who had borrowed from unconventional sources (about 12 percent of the 532 borrowers), such as friends or relatives, doctors, or insurance companies, were not included in the analysis of credit source.

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[5] 1983 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

[6] Making the purchase with a credit card or line of credit, 231 respondents were not extensively questioned about their shopping behavior and so were excluded from the analysis. Many of these consumers may have used this "credit" as a convenient substitute for cash rather than as a loan, and so their motivations would be different than those of instalment borrowers.

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[7] Incentive rates were only available on select models, and which consumers had purchased these could not be determined. Since only 11 percent of new auto loans were obtained from auto finance companies during the appropriate period (the fourth quarter of 1982 through the first quarter of 1983), overestimation of the incentive rate financing should be inconsequential. Also, the first incentive rate campaigns conducted in the summer of 1981 and in early 1982 were ignored because they did not offer steep discounts nor were they pervasive.

## B. Credit Search Behavior

### 1. Incidence of Credit Search and Information Sought

In 1983, 29 percent of those questioned reported that they shopped before obtaining a closed-end loan--little increase over results of earlier studies. Nearly 80 percent of borrowers who shopped made comparisons of interest rates and finance charges and stated that the primary motivation for their search was to find a lower interest rate (Table 1). One-third of the shoppers were interested in other loan characteristics, while only 22 percent sought credit availability or a particular size of monthly payment. Lower income borrowers who shopped for credit did not indicate that they were more interested in credit availability or payment size than higher income households.

But credit shoppers, even those specifically seeking a lower interest rate, were not more likely to borrow from "low-rate" creditors than nonshoppers (Table 1). Consumers who shopped, but borrowed from a retailer, dealer or finance company, were not necessarily less creditworthy. Compared to others in the sample, these borrowers had higher incomes and education, held larger amounts of liquid assets, and rarely had been rejected for credit in the past. But they also had above average debt to income ratios, both for outstanding debt and monthly payments. When asked to state the most important factor on a credit contract, nearly 40 percent mentioned the monthly payment (another 40 percent mentioned interest charges). Thus, credit shopping for many of these borrowers meant

Table 1

Credit Source and Type of Information Sought

Those Who Borrowed From Low-Rate Creditors:

| | |
|---|---|
| Overall sample | 55% |
| Credit shoppers | 54% |
| Nonshoppers | 55% |

Type of Information Sought by Shoppers:

| Type of Information | Those Seeking[a] This Type | Those Who Borrowed From[b] Low-Rate Creditors |
|---|---|---|
| Interest rate and finance charges | 78% | 52% |
| Other loan characteristics (contract term, insurance, general credit terms, etc.) | 31 | 51 |
| Credit availability and payment size | 22 | 57 |

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[a] For the 138 borrowers who shopped for credit, the percent seeking each type of information. Because they were allowed two responses, percentages add to more than 100.

[b] For shoppers seeking each type of information, the percent who borrowed from a conventional "low-rate" credit source.

finding a monthly payment which they were comfortable with, not the lowest interest rate.

Although not all consumers comparison shop for credit, each must choose a creditor. Thirty-six percent of the sample of recent borrowers indicated that the interest rate or finance charge was the motivation behind choosing the type of creditor--for example, a commercial bank versus a retailer (Table 2). In selecting a particular creditor, prior experience was the motivation for nearly one-half of the respondents (Table 3).

Over 40 percent of those consumers who selected creditors by interest rate shopped for credit, but nearly two-thirds were served by low-rate creditors. And, although only about one-fourth of those consumers who selected a creditor because of previous experience shopped, three-fourths borrowed from a low-rate credit source. These results indicate that nonshoppers were not necessarily borrowing at high rates.

Classifying the sample according to various financial and socio-demographic characteristics provides further understanding of consumers' credit search behavior and the type of creditors serving different groups of borrowers. The results of basic univariate analyses are presented in Table 4. Given that many of the characteristics are highly correlated, multivariate analysis is also included in order to determine which factors were most directly linked with differences in search behavior.

Table 2

Reasons for Choice of Type of Creditor
(shopping behavior and credit source)

| Reason | Those Who Selected Given Reason[a] | Those Who Shopped[b] | Those Who Borrowed From Low-Rate Creditors[c] |
|---|---|---|---|
| Interest rate paid | 36% | 44% | 65% |
| Previous experience | 37 | 22 | 74 |
| Credit availability | 12 | 35 | 44 |
| Convenience | 19 | 25 | 50 |
| Reputation, safety of institution, friendly | 4 | 25 | 60 |
| Arranged by dealer | 11 | 21 | 10 |
| All others | 10 | 33 | 40 |

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[a] Percent of 471 borrowers who gave reasons. Because they were allowed two responses, percentages add to more than 100.

[b] For those respondents giving each reason, the percent who credit shopped.

[c] For those respondents giving each reason, the percent who had borrowed from a conventional "low-rate" credit source.

## Table 3

### Reasons for Choice of a Particular Creditor (shopping behavior and credit source)

| Reason | Those Who Selected Given Reason[a] | Those Who Shopped[b] | Those Who Borrowed From Low-Rate Creditors[c] |
|---|---|---|---|
| Interest rate paid | 17% | 43% | 62% |
| Previous experience | 47 | 25 | 76 |
| Credit availability | 8 | 31 | 54 |
| Convenience | 13 | 29 | 54 |
| Reputation, safety of institution, friendly | 6 | 26 | 44 |
| Arranged by dealer | 15 | 30 | 22 |
| All others | 9 | 32 | 28 |

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[a] Percent of 462 borrowers who gave reasons. Because they were allowed two responses, percentages add to more than 100.

[b] For those respondents giving each reason, the percent who credit shopped.

[c] For those respondents giving each reason, the percent who had borrowed from a conventional "low-rate" credit source.

## 2. Univariate Analysis of Search Behavior

Consumers with more education and higher income were more likely to spend time shopping for consumer credit (Table 4). Higher levels of education and income--two characteristics that are highly positively correlated--could be associated with individuals whose time carried a high opportunity cost, implying that they would search less. But, the level of understanding of the marketplace and the perceived benefits of search could be positively correlated to education and income. As suggested in earlier studies, consumers with lower income (and often less human capital) may perceive that they would not be deemed creditworthy by a variety of creditors, and so could incur the additional search cost of embarrassment from rejection. A significantly greater proportion of the lowest income earners had been rejected for credit in the past. Thus, consumers with high income and education may perceive high opportunity costs but positive net benefits to search.

Young single people were the most likely to shop for credit. This propensity may be indicative of lower opportunity cost of time, lack of prior experience with creditors, or perceived higher benefits from search because no habits had been established in a more regulated market. Retired persons, and others aged 45 or over and not in the labor force, were significantly less likely to shop but were not significantly more likely to borrow from "high-rate" creditors. This behavior may be explained by established relationships with low-rate creditors, as over half of older borrowers had had prior experience with their creditor. Single parents, the majority of whom were women (90 percent), were not only less likely

## Table 4

### Characteristics of Consumers Who Shopped For Credit or Used Low-Rate Credit Sources

| | Those Who Shopped[a] | | Those Who Borrowed From Low-Rate Creditors[b] | |
|---|---|---|---|---|
| All Respondents | 29% | | 55% | |
| Education of Household Head | | | | |
| Some high school or less | 16% | | 41% | |
| High school diploma | 21 | | 61 | |
| Some college | 30 | | 59 | |
| College degree or more | 52 | $\chi^2 = 41.1$* | 51 | $\chi^2 = 10.5$* |
| Life Cycle of Household Head | | | | |
| Single, <45, no children | 43% | | 53% | |
| Single parent, any age | 12 | | 26 | |
| Married, <45 | 31 | | 58 | |
| ≥45 and working | 26 | | 59 | |
| ≥45 and retired (or otherwise not in labor force) | 19 | $\chi^2 = 11.5$* | 54 | $\chi^2 = 14.4$* |
| Household Income Quintile | | | | |
| Lowest | 15% | | 41% | |
| Second | 21 | | 55 | |
| Third | 28 | | 54 | |
| Fourth | 33 | | 58 | |
| Highest | 35 | $\chi^2 = 9.7$* | 55 | $\chi^2 = 3.4$ |
| Liquid Asset Holdings | | | | |
| $500 or less | 22% | | 47% | |
| $501 - 999 | 21 | | 53 | |
| $1,000 - 4,999 | 32 | | 59 | |
| $5,000 or more | 39 | $\chi^2 = 11.2$* | 58 | $\chi^2 = 4.7$ |
| Household Debt Burden | | | | |
| Ratio of outstanding instalment debt to pre-tax income: | | | | |
| less than 5% | 19% | | 61% | |
| 5 - 9% | 24 | | 56 | |
| 10 - 19% | 30 | | 58 | |
| 20 - 39% | 30 | | 50 | |
| 40% or more | 46 | $\chi^2 = 14.8$* | 51 | $\chi^2 = 3.0$ |

Table 4 (continued)

| | Those Who Shopped[a] | | Those Who Borrowed From Low-Rate Creditors[b] | |
|---|---|---|---|---|
| Amount Borrowed for This Loan | | | | |
| less than $1,000 | 13% | | 36% | |
| $1,000 - 2,499 | 22 | | 60 | |
| $2,500 - 4,999 | 26 | | 57 | |
| $5,000 - 9,999 | 45 | | 56 | |
| $10,000 or more | 42 | $\chi^2$ = 28.3* | 64 | $\chi^2$ = 12.3* |
| Region of Residence | | | | |
| Pacific and Mountain | 35% | | 56% | |
| West North Central and East South Central | 17 | | 67 | |
| East North Central and West South Central | 29 | | 50 | |
| South Atlantic | 29 | | 45 | |
| Middle Atlantic and New England | 33 | $\chi^2$ = 7.3* | 60 | $\chi^2$ = 10.0* |
| Area of Residence | | | | |
| Central city | 32% | | 58% | |
| Suburb | 35 | | 51 | |
| Adjacent (beyond suburb- $\leq$ 50 miles from city) | 24 | | 54 | |
| Outlying (beyond suburb- 50+ miles from city) | 19 | $\chi^2$ = 9.3* | 61 | $\chi^2$ = 2.4 |
| Rate Ceiling Environment | | | | |
| Rate ceiling 18% or less | 24% | | 54% | |
| Deregulated market or rate ceiling of over 18% | 33 | $\chi^2$ = 4.7* | 56 | $\chi^2$ = 0.1 |
| Prior Experience With Creditor | | | | |
| Had a previous loan | 21% | | 67% | |
| No previous loan | 38 | $\chi^2$ = 15.6* | 42 | $\chi^2$ = 26.0* |
| Rejection Experience | | | | |
| Turned down for credit in past few years | 13% | | 46% | |
| No rejection in recent years | 31 | $\chi^2$ = 8.8* | 56 | $\chi^2$ = 2.2 |

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[a] Percent of 483 respondents who shopped before obtaining credit; the remaining 49 of the 532 borrowers did not respond to the search question.

[b] Percent of 443 respondents who had borrowed from conventional "low-rate" credit sources; 27 borrowers did not reveal the source; 62 borrowed from unconventional sources. The percent who had borrowed from "high-rate" creditors is 100 minus the figure reported here.

*Significant at 95 percent level of confidence.

to shop, but a greater proportion of them borrowed from "high-rate" creditors--retailers in most cases.

Credit shopping increased with the amount of liquid assets owned. If a consumer holds assets which can be easily liquidated to make a purchase, it is more likely that he or she will shop for a lower loan rate in order to justify borrowing. The data may reflect opportunities available in the early 1980s for earning a higher after-tax rate of return on liquid assets than the after-tax cost of credit, particularly since the amount of liquid assets owned did not significantly affect the consumer's source of credit.

Consumers with higher ratios of outstanding instalment debt to income (debt burden) were also more likely to shop credit terms, possibly being more concerned about debt service (interest payments). Similarly, except for very large instalment loans, which are likely to be customized, the probability that the consumer shopped increased with the amount borrowed. The benefit derived from search, in the form of interest savings from a lower interest rate, increases in value as the loan amount increases. Only 13 percent of consumers borrowing under $1,000 shopped for their loan agreement. Further, about two-thirds of these small loan customers borrowed from "high-rate" creditors. Of those consumers borrowing $5,000 or more, 44 percent shopped, and only 42 percent borrowed from "high-rate" creditors.

In an examination of consumer behavior across regions, credit shopping was more prevalent in the West (Mountain and Pacific states) and the Northeast (New England and Middle Atlantic states), and less so in the West

North Central and East South Central regions.[8] These differences may be due to variation in the socioeconomic characteristics of the borrowers across the regions. Another reason for differences in shopping behavior may be regional variation in branching and bank holding company laws. At the time of the study, the Western and Northeastern regions of the U.S. allowed more widespread bank branching, relative to the Midwestern section, possibly providing greater opportunities for consumers to comparison shop.

Consumers living in or near a central city were more likely to shop than those living farther outside a city but there was insignificant variation in the source of credit for consumers in different areas. Fewer conventional credit sources are available in rural areas and it is likely that these consumers were served mainly by smaller banks or branches of larger banks from outside of the area.[9] But, the "high/low" classification of creditors ignores the variation in interest rates offered by a particular type of creditor. It is possible that, on average, commercial bank loan rates in rural areas were higher than those charged in metropolitan areas. Thus, we cannot claim that rural nonshoppers were paying interest rates similar to those paid by nonshoppers residing in more populated and more highly competitive areas.

Search theory suggests that the extent to which consumers shop is positively correlated with the dispersion in prices of the commodity. In the market for consumer credit, the removal of usury ceilings should thus increase borrowers' propensity to shop. The effect of usury ceilings on credit shopping was measured with the classification of consumers by the rate ceiling environment of their local credit market.[10] Consumers were more likely to shop in the less restricted states, possibly recognizing that in a deregulated market there was greater variability in loan prices. But, contrary to the findings reported by Peterson and Black, consumers in the more restricted states were not more likely to borrow from high-cost sources--retailers who maintained expected returns under binding rate ceilings by increasing product prices. This may be because ceilings in the later period were not low enough to significantly reduce credit availability at financial institutions.

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[8] Because of few observations in the sample from several of the nine U.S. census regions, those regions similar in both typical shopping behavior and credit source were combined.

[9] Borrowing for farm business operation is not included in this analysis.

In accordance with Urbany's propositions, the results of this analysis indicated that once a consumer borrowed from a creditor, he or she was less likely to look for a different source the next time the need for credit arose. Two-thirds of return borrowers had been served by "low-rate" creditors, suggesting that the price and service were such that the potential gains from additional search were outweighed by lack of familiarity, increased paperwork, and the time expended in the search process. Borrowers who did not have prior experience with the creditor were both more likely to shop and were more likely to use a "high-rate" source.

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[10] By 1983, many state legislatures raised or removed consumer credit ceilings. Those states which were still limiting the rate that could be charged to 18 percent or below were: AR, FL, IA, KY, LA, MA, ME, MI, MN, MO, NC, PA, TX, WA, WV, AK, CT, HI, ND, and VT. Observations from the last five were not obtained in the sample of recent borrowers.

Individuals learn about creditors not only through association as customers but also through experience with rejection. Few borrowers who had been rejected for a loan in the past few years, or were unable to borrow as much as they would have liked, shopped for credit. Their subsequent failure to shop was likely due to perceived high costs from embarrassment and fear of rejection. These consumers simply went to a source where they were more certain of obtaining credit, in many cases the seller of the merchandise being acquired.

### 3. Multivariate Analysis of Search Behavior

To determine which factors were most directly linked with differences in consumer search behavior, binary logit analysis was performed on a borrower's propensity to search for credit and creditor information and on the likelihood of being served by a "low-rate" creditor. As documented in McFadden (1974), this framework is derived from a random utility model of consumer behavior. The nonstochastic component of utility is assumed to be linear in the parameters, and the random component denotes attributes of the environment and/or consumer which are not observed or cannot be measured. In particular, loyalty to a creditor or prior knowledge about the distribution of prices in the credit market--factors not strongly captured in the survey--may be a part of this random unmeasured component.

To test the overall fit of the models, a likelihood ratio statistic and a pseudo $R^2$ are derived. The likelihood ratio is distributed $X^2(r)$, where r equals the number of parameters and is similar to the F test in ordinary regression analysis. As reported in Table 5, the null hypothesis that all coefficients are zero is rejected at the 95 percent level of confidence for each equation. The pseudo $R^2$, adjusted for degrees of freedom, also similar to the statistic derived in ordinary regression analysis, ranges between zero and one. Within this range, a larger value indicates better model fit, but because of the probabilistic nature of the predicted values, the upper limit of this statistic is much less than one. Another measure of the model's explanatory power is the proportion of observations correctly predicted.

In one equation, the dependent variable took the value of one if the borrower shopped for credit terms, and zero otherwise. The most common group remained in the constant for the dummy variables derived from the stage in life and education of the household head; that is, married couples under 45 years of age and persons with a high school education.[11] The analysis indicated that, holding other factors constant, single parents were significantly less likely to shop for credit and highly educated consumers were more likely to shop, compared to the omitted group. The propensity to shop was significantly lower for borrowers who had prior loan experience with the creditor and those who had been rejected for credit in the past, but increased with the household debt burden. Region of residence, liquid asset holdings, income, the amount borrowed, residing in a rural area, and an 18 percent rate ceiling in the local credit market had

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[11] Although several variables were correlated (income and education, for example), including them all did not significantly affect the estimated results.

Table 5

Determinants of Consumer Credit Shopping Behavior and Credit Sources

| Dependent Variable | Credit Shop | Low-Rate Credit Source |
|---|---|---|
| Mean value | .30 | .57 |
| Independent Variables | | |
| Life cycle of household head | | |
| Single, <45, no children | 0.2 (0.54) | -0.3 (0.74) |
| Single parent any age | -1.1* (1.95) | -1.1* (2.40) |
| ≥45 and working | -0.4 (1.22) | -0.2 (0.61) |
| ≥45 and retired (or not in labor force) | -0.6 (0.84) | 0.2 (0.34) |
| Education of household head | | |
| Some high school or less | -0.5 (1.07) | -0.9* (2.29) |
| Some college | 0.5 (1.33) | 0.01 (0.02) |
| College degree or more | 1.2* (3.58) | -0.5 (1.55) |
| Liquid asset holdings ($000s) | 0.02 (1.32) | not in equation |
| Household pre-tax income ($000s) | 0.001 (0.20) | -0.01 (1.32) |
| Amount of loan | 0.00002 (0.93) | 0.0001* (2.57) |
| Household debt burden | 0.02* (3.07) | -0.01* (2.15) |
| Previous loan with creditor | -0.7* (2.73) | 1.1* (4.52) |
| Rejection experience | -1.4* (2.61) | -0.1 (0.39) |
| Low rate ceiling | -0.1 (0.45) | -0.1 (0.50) |
| Reside in rural area | 0.03 (0.09) | 0.2 (0.47) |
| Region of residence | | |
| W.N. and E.S. Central | -0.7 (1.62) | 0.6 (1.51) |
| South Atlantic | not in equation | -0.6* (1.83) |
| number of observations | 388 | 357 |
| likelihood ratio statistic | 147.0* | 70.1* |
| pseudo $R^2$ (adjusted) | 0.24 | 0.10 |
| correctly predicted | 74% | 69% |

*Significant at 95 percent level of confidence, one-tailed test; absolute value of asympototic t-statistics are in parentheses.

no significant impact on consumer shopping behavior, when all other factors were held constant.

For the other equation, the dependent variable took the value of one if the borrower was served by a "low-rate" creditor and zero otherwise. Compared to the omitted groups and holding all else constant, single parents and consumers with little education were significantly more likely to borrow from "high-rate" sources of credit. The smaller the loan, the more likely the consumer borrowed from a "high-rate" credit source. And, while the propensity to shop grew with the consumer's debt burden, the likelihood of borrowing from a "low-rate" credit source declined. Customers of commercial banks, thrifts, and credit unions ("low-rate" creditors) were significantly more likely to be return borrowers than those of retailers and dealers (the major components of the "high-rate" category). Rejection experience, household income, an interest rate ceiling in the local credit market, and residing in a rural area had no significant impact on the source of credit. Borrowers residing in the South Atlantic states were significantly less likely to use conventional "low-rate" sources of credit than those living elsewhere.

## C. Methods of Search

The method of search was examined for consumers who indicated that they had tried to obtain information on creditors and credit terms (Table 6). In 1977 Durkin and Elliehausen found that 51 percent of shoppers had contacted creditors of a different type than they eventually borrowed from. This proportion rose to 80 percent in 1983, a good indication of increased competition among creditors and effective marketing to attract new customers. Only 15 percent of shoppers in 1983 contacted different creditors of the same type that they borrowed from, down from 32 percent in 1977. These results may indicate that more consumers had come to believe that credit terms were less varied within a class of creditors, as compared to among classes.

## IV. Implications for Current Market Developments

### A. The Market for Revolving Credit

In the univariate analysis, consumers were significantly less likely to shop when the amount of the loan was small. Further, multivariate analysis, holding all other factors constant, suggested that the smaller the loan the more likely the borrower obtained higher-rate credit arranged by dealers or retailers.

Although these analyses were limited to closed-end credit, there may be implications for search practices on open-end credit card plans. Such plans typically feature repeat business by consumers who borrow against pre-established lines of credit. Under these plans, the incentive to shop for the most attractive terms may be limited by the small amount and the short effective term of the credit. Given the cost of seeking information, the transactions cost of switching cards, and the minimal differences in finance charges, the perceived net benefit of credit shopping may be negative. This information about consumer behavior supports the effectiveness of the nonrate related ways in which credit card issuers

## Table 6

## Methods of Search

| Method | Those Using[a] This Method | Those Who Borrowed From[b] Low-Rate Creditors |
|---|---|---|
| Shopped at other creditors of the same type as borrowed from | 15% | 62% |
| Shopped at other creditors of different type than borrowed from | 80 | 45 |
| Other (talked with friends, neighbors, consulted media); includes vague responses like "phoned places" and "looked around" | 21 | 54 |

[a] For the 138 borrowers who shopped for credit the percent using each method. Because they were allowed two responses, percentages add to more than 100.

[b] For shoppers employing each method, the percent who borrowed from a conventional "low-rate" credit source.

compete. Similar to providers of smaller closed-end loans, they emphasize automatic travel insurance, card protection, merchandise and travel discounts, and a myriad of other benefits to attract new customers.

According to fundamental search theory, as noted earlier, the quantity of credit shopping should be inversely related to its cost. A reduction in the opportunity cost of seeking and interpreting information implies that a smaller difference in interest rates is needed to yield a positive net benefit to search. In 1986, Wisconsin and California passed laws which changed disclosure requirements on credit cards and related plans. Under the new legislation, more complete information on terms of these credit instruments must be disclosed at the time of solicitation rather than before the first transaction is made under the plan--currently the typical rule. Other states and the U.S. Congress have proposed similar legislation. Such disclosure should reduce search costs and increase the amount of comparison shopping for this form of credit.[12]

## B. Tax Reform and Credit Shopping

There is some evidence that the Tax Reform Act of 1986 will have a significant, albeit gradual, impact on the amount of credit consumers use and on their credit shopping behavior. In analysis of consumer debt use, Sullivan and Worden (1986) found that a large portion of the growth in consumer credit use over the past decade can be attributed to higher income households. Not only is this group of consumers more likely to use consumer credit, but it incurs a higher proportion of total outstandings. The analysis also suggests that the propensity to deduct interest for tax purposes (a household took more than the standard deduction) was positively correlated with the propensity to use consumer credit and the amount of leverage in a household's portfolio (the ratio of outstandings to household income).

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[12] Worden and Fisher (1987) discuss the possible affects of disclosure regulation on consumers' shopping for credit cards. A recent survey of cardholders provides the data for their analysis.

Based on these results, and other statistics from the Internal Revenue Service, Sullivan (1986) discusses the possible impact of the Tax Reform Act on consumer borrowing. Even with lower marginal tax rates, the after-tax cost of consumer credit will increase significantly with the loss of the interest expense deduction. And, assuming their use of consumer credit has not changed over the past few years, high-income households will incur the greatest rise in costs.

In the present analysis of shopping behavior, consumers with higher incomes and larger liquid asset holdings were shown to have a higher propensity to shop for credit terms. Given the tax reform rulings and assuming that the behavior observed in 1983 has not changed dramatically, these consumers will now have an even greater incentive to shop for lower rate sources of credit.

### C. Low-Rate Incentive Campaigns From Automobile Finance Companies

The primary objective of most credit shopping is to seek the lowest interest rate. This is consistent with the broad success of the aggressive lending practices by financial affiliates of the major automobile manufacturers. It might be argued that this kind of rate competition would increase market efficiency by bidding the price of credit down to its "true" value. But, as recently suggested in the media, the effective finance charge for such contracts is difficult to calculate if the alternative of a cash rebate is offered.[13] Instead of calling for state legislation against these low-rate incentive campaigns, another approach is the education of consumers in finance valuation techniques. Whereas market efficiency is inhibited by restrictive regulation, it is promoted by the clarification of the costs of credit.

### D. Increasing Competition in Financial Services

A greater percentage of the borrowers in 1983 who shopped for credit obtained information about a variety of types of creditors than did shoppers in previous years. This is evidence of increasing and effective competition among providers of consumer credit.

Consumers with prior borrowing experience were less likely to shop for credit terms. Even if the costs of search are reduced, it is possible that either loyalty or prior knowledge of the distribution of prices will inhibit a significant increase in credit shopping for these consumers. Borrowers who do not have extensive credit experience would be the most likely to take advantage of new credit products and providers, and make use of a greater dissemination of credit price information.

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[13] "Rebate or Loan: Car Buyers Need To Do the Math," Wall Street Journal, 10 October 1986.

Initial analysis of the 1983 data found that young consumers (and those with a greater amount of human capital) were more likely to credit shop. Their behavior indicated an interest in competitive pricing that was also evident in the results of a recent survey by the American Banker.[14] In that study, consumers 35 years of age and under, and with increasing earnings potential, were more likely to shop at nonbanking firms for banking services. Not particularly attached to conventional creditors, this group of young professionals is attracted to the new products and expanded services of diversified financial giants. The survey found a similar attitude among two-earner households, another group whose proportion in the population is growing.

In response to competition, management at conventional creditors is increasing its emphasis on marketing financial services. To strengthen customer ties, relationship pricing is being developed, with the price of one product dependent on the purchase of another. Although this practice increases the cost of comparison shopping for credit, it tightens the creditor's relationship with former borrowers, who, according to this analysis, were less inclined to shop anyway.

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[14] "How Consumer America Views the Changing Financial Services Industry," conducted in June 1986. See Laura Gross, "Diversified Financial Giants Gaining Consumer Approval," American Banker, 24 September 1986.

## V. Nonshoppers and Market Efficiency

Current trends in the consumer credit market--reduced constraints on providers of credit, technological advances in evaluating credit risk, and better dissemination of rate information--can promote more efficient pricing of credit. This analysis indicated that some, but not all, consumers will reap the benefits of these changes by comparison shopping for credit. Borrowers may choose not to shop for credit terms because they perceive that the benefits from doing so are exceeded by the costs incurred.

The question is whether these nonshoppers are being inefficiently served by the market and pay higher prices for similar credit contracts than shoppers of the same credit risk. Consumers with established relationships, particularly at "low-rate" creditors, are likely to perceive no net gain from seeking a lower interest rate. Their nonshopping behavior does not imply market inefficiency. Further, consumers who shopped for credit did not necessarily pay a lower price. Some consumers (highly educated and with high levels of income) had large debt burdens and so were more interested in finding an affordable monthly payment. They borrowed from retailers and dealers.

Less educated borrowers and those with lower incomes had a lower propensity for shopping, as did individuals who had been rejected for credit in the past. Similar results were indicated for single parents--in this sample typically a woman with lower income, few assets, and a past record of credit rejection. These borrowers may have perceived net costs to shopping because they realized higher default risk and believed that they were unlikely to qualify for lower-rate credit. In this case, these nonshoppers were not being inefficiently served by the credit market.

Other factors concerning these nonshoppers may indicate a policy issue, though. Consumers were asked if they had ever considered applying for credit at a particular place but did not for fear of being rejected. One-third of the single parents in the sample responded positively to this question, significantly more than other consumers their age. Seventeen percent of consumers in the lowest income group responded positively, again significantly more than consumers in other income groups.

It may be argued that these consumers recognized a lack of creditworthiness. Over one-half of each group (single parents and lowest income quintile) said that insufficient ability to repay was the likely reason they would be rejected; one-third believed the reason was a poor credit history or the lack of one. But the source of their perceptions should be noted. For each of these groups, 35 to 40 percent claimed that their information came directly from the creditor. These consumers did not apply for credit, but perceived rejection nonetheless. Dissuasion from formal application is a public policy issue. The credit market cannot work efficiently if consumers are not given an opportunity to have their credit worthiness formally and completely evaluated.

## V. Summary

This analysis of the credit shopping behavior of households provides evidence that such behavior is systematically related to consumers' perceived costs and benefits of such activities. These costs and benefits do change over time as technology, the availability of information, competition and available credit products change. But a consumer's perception of credit shopping is heavily influenced by his or her experiences at borrowing. Defunct regulations that in effect discouraged shopping, previous credit rejections, discriminatory screening practices, or early positive experience with "high-rate" creditors influence the credit shopping practices of borrowers. Given the borrower's current condition, actual creditor choices may thus look suboptimal. The education of borrowers about available alternatives and regulations that require full disclosure of credit terms and encourage price competition among creditors for all risk classes of borrowers appear to be the optimal public policy variables that will aid the development of more efficient consumer credit markets.[15]

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[15] An example of one state's response to these issues is Massachusetts Banking Commission's "Shopper's Credit Guide." This guide, printed monthly in newspapers, lists annual percentage rates of interest by individual financial institutions in several major cities for a variety of credit contracts. Also, in response to the Truth in Lending Simplification and Reform Act (1980), the Federal Reserve Board began an investigation of the effectiveness of similar shoppers' guides.

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## EXECUTIVE SUMMARY

# SHOPPING FOR CONSUMER CREDIT: IMPLICATIONS FOR MARKET EFFICIENCY

Debra Drecnik Worden and A. Charlene Sullivan*

In a perfectly efficient financial market the price of a contract is a function of its risk. According to classical theory, this situation prevails when buyers have equal access to complete and costless information about the costs and benefits of competing contracts from a variety of sellers.

There are many barriers which potentially contribute to price inefficiency in the market for consumer credit. Since the market is generally local in nature, differences in local competition may cause the price for credit to vary across borrowers. Another barrier may be proprietary or incomplete information about the credit risk of the borrower. Finally, the complete array of terms for credit contracts is so complex and varied that the consumer may not be able to shop effectively for credit.

Diminishing the first two barriers, technological advances and deregulation are setting the stage for improvements in the price efficiency of the consumer credit market. One function of the Truth in Lending Act (1968), legislation which provides for standardized disclosure of terms so that consumers can compare the price of various consumer credit contracts, was to diminish the third barrier. A reduction in the dispersion of interest rates quoted to a given individual for homogeneous contracts should follow from such legislation. In other words, borrowers of similar credit risk would be charged the same interest rate, holding other terms of the contract constant.

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Although market efficiency is dependent upon the existence of a variety of sellers, unregulated prices, and available information--consumers' shopping behavior is a key variable in the equation. Since perceived costs and benefits vary across buyers, some will engage in more search activity and be more informed about available prices than others. The existence of less informed buyers allows some sellers to charge higher prices; in other words, it adds to the level of price dispersion and market inefficiency.

To the extent that less informed consumers are not paying the lowest price for credit, given their level of risk, the credit market may be perceived as "unfair". Although variation in consumer shopping behavior is due to personal differences in perceived costs and benefits, the extent to which shopping for credit is discouraged by discriminatory credit screening practices, incomplete information, or inadequate competition is a matter of public policy.

The purpose of this study is to provide empirical evidence of the credit shopping behavior of consumers and its implications for the efficiency of the consumer credit market and for public policy. The data analyzed were derived from the 1983 Survey of Consumer Finances, a national sample of 3,824 households. The financial and socioeconomic characteristics of consumers who shopped before committing to a closed-end credit agreement are compared with those who did not. The source of credit is examined in conjunction with whether a borrower sought information on credit terms.

Basic Survey Results.

- --29 percent of the consumers credit shopped, little increase over results of earlier studies.
- --Nearly 80 percent of those consumers who shopped for credit were seeking lower interest rates.
- --Just 55 percent of credit shoppers, even among those claiming to seek lower interest rates, borrowed from conventional "low-rate" creditors (commercial banks, thrifts, credit unions, and auto finance cos. during incentive campaigns); the balance were served by retailers, dealers, and finance companies.
- --Credit shoppers who borrowed from retailers were more interested in an affordable monthly payment; most of these consumers had better incomes and education, but above average debt burdens.
- --As compared to earlier studies, a greater proportion (80 percent) of credit shoppers contacted different types of creditors.

The propensity to shop for credit:

- --increases with the education, income and liquid asset holdings of the consumer.
- --is significantly less for consumers who have had previous borrowing relationships with commercial banks, thrifts and/or credit unions.
- --is significantly less for consumers who have been rejected for credit in the past.
- --is significantly lower for single parents (who typically borrowed from retailers), and for older retired persons (who typically borrowed from commercial banks, thrifts, and/or credit unions where they had prior borrowing experience).
- --is significantly higher for young, single persons with no children.

--increases with the household debt burden (total and monthly debt to income) and the amount of the loan.

--is significantly lower for consumers who reside in: a) rural areas; b) the West North Central & East South Central regions of the U.S.; and c) states with more restrictive interest rate ceilings.

Implications for Current Market Developments.

Revolving Credit. The results of these analyses may have some implications for search practices on open-end credit card plans. Such plans feature repeat business by consumers who borrow against pre-established lines of credit. The incentive to shop for the most attractive terms may be limited by the small amount and the short effective term of the credit. Given the cost of seeking information, the transactions cost of switching cards, and the minimal differences in finance charges, the perceived net benefit of credit shopping may be negative.

But, a reduction in the cost of seeking and interpreting information implies that a smaller difference in interest rates is needed to yield a positive net benefit to search. New legislation, requiring more complete information on the terms of open-end credit to be disclosed at the time of solicitation, should thus increase the amount of comparison shopping for this form of credit.

Tax Reform Act of 1986. Even with lower marginal tax rates, the after-tax cost of consumer credit will increase significantly with the loss of the interest expense deduction. And, assuming their use of consumer credit has not changed over the past few years, high-income households will incur the greatest rise in costs. In this analysis, consumers with higher incomes and large liquid asset holdings had a higher propensity to shop for credit terms. Given the tax reform rulings, these consumers are likely to have an even greater incentive to shop for lower rate sources of credit.

*Low-Rate Incentive Campaigns of Automobile Finance Companies*. The broad success of these aggressive campaigns are consistent with the fact that the primary attraction in most credit shopping is a lower interest rate. But, as has been suggested elsewhere, the effective finance charge for such contracts is difficult to calculate if the alternative of a cash rebate is offered. The education of consumers in finance valuation techniques is thus called for.

*Increasing Competition in Financial Services*. A greater percentage of the borrowers who shopped for credit in 1983 obtained information about a variety of types of creditors than did shoppers in previous years--implying effective marketing and increasing competition among providers of consumer credit. Evidence suggests, though, that loyalty or prior knowledge about the distribution of prices inhibits credit shopping for consumers with prior borrowing experience. Relationship pricing of financial products can strengthen ties with former borrowers. Borrowers who do not have extensive credit experience would be the most likely to shop and take advantage of new credit products and providers.

### *Nonshoppers and Market Efficiency*.

Borrowers may choose not to shop for credit terms because they perceive that the costs exceed the benefits. The question is whether these nonshoppers are being inefficiently served by the market and pay higher prices for similar credit contracts than shoppers of the same credit risk. The nonshopping behavior of consumers with established relationships, particularly at low-rate creditors, does not imply market inefficiency--as they are likely to perceive no net gain from seeking a lower interest rate.

Other nonshoppers were characterized by less education, lower income, and prior rejection experience. Single parents--in this sample typically women with lower incomes, few assets, and a past record of credit rejection--did not shop. These borrowers may have perceived net costs to shopping because they realized that they were unlikely to qualify for lower-rate credit. This is not market inefficiency.

But, another factor concerning these nonshopppers must be addressed. A significant percentage of these consumers (low income and/or single parents) mentioned that they had, at least once, considered applying for credit somewhere, but did not for fear of being rejected. It may be argued that these consumers recognized a lack of creditworthiness, but the source of their perceptions often came directly from the creditor. These consumers did not apply for credit, but perceived rejection nonetheless. Dissuasion from formal application is a public policy issue

## Summary.

A consumer's perception of the value of credit shopping is heavily influenced by prior borrowing experience. Defunct regulations that in effect discouraged shopping, previous credit rejections, discriminatory screening practices, or early positive experience with "higher rate" creditors influence credit shopping practices. The education of borrowers about available alternatives and regulations that require full disclosure of credit terms and encourage price competition among creditors for all risk classes of borrowers appear to be the optimal public policy variables that will aid the development of more efficient consumer credit markets.

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## EXECUTIVE SUMMARY

Working Paper No. 55

# Economic Factors Associated With Delinquency Rates on Consumer Instalment Debt

A. Charlene Sullivan*

The analysis of monthly delinquency rates for open and closed-end consumer loan portfolios held by commercial banks between 1975 and 1986 supports the following conclusions:

- The level of the debt burden index (consumer credit outstanding as a proportion of disposable personal income) is significantly positively associated with the level of delinquency for a diversified portfolio of closed-end consumer loans as well as for portfolios of auto loans and of credit card outstandings.
- Delinquencies in banks' consumer loan portfolios are not statistically associated with general employment conditions (unemployment rate hours in the manufacturing work week) but the level of delinquencies for auto loan portfolios held by auto finance companies was positively and significantly associated with the level of unemployment.

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- The level of consumer sentiment did not have a statistical relationship with the level of delinquencies in portfolios of consumer loans.
- The shifts in market share in the auto loan market have had an impact of delinquencies for lenders in the auto credit business.
- The growth of consumer credit outstanding in recent years was associated with a significant decline in the level of portfolio delinquencies for commercial banks.

The results of this analysis may be used to anticipate the effects on credit risk managers of slowing in the growth of credit outstanding, changes in the use of credit associated with tax reform and further change in the market shares of different types of lenders in the consumer credit market.

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# WORKING PAPER NO. 55

# Economic Factors Associated With Delinquency Rates on Consumer Instalment Debt

1987

Krannert Graduate School of Management — Purdue University

# ECONOMIC FACTORS ASSOCIATED WITH DELINQUENCY RATES ON CONSUMER INSTALMENT DEBT

A. Charlene Sullivan*

## Abstract

Trends in loan delinquencies and losses over time and among credit types contain important information for credit managers and market analysts. The results of this study provide information about the relationship between trends in delinquency rates of portfolios of consumer credit contracts and variables related to lenders' market share, credit market growth, household financial condition and general business conditions.

The results of the analysis of monthly delinquency rates for open and closed-end loan portfolios held by commercial banks between 1975 and 1986 indicated that the debt burden measure was significantly and positively associated with delinquency rates, for all types of consumer loans analyzed. Banks' market share of consumer credit outstanding was positively associated with the delinquency rate for the average portfolio of closed-end consumer loans, suggesting that banks increased credit risk

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to win market share during the analysis period. However, the rate of growth of credit outstanding during the period was negatively associated with delinquency rates for closed-end loans.

The rapid growth of revolving credit outstanding in the last 10 years has been statistically associated with a decline in delinquency rates for the average portfolio of revolving credit held by commercial banks. The average delinquency rate for portfolios of revolving credit accounts was significantly positively associated with the household debt burden and with the unemployment rate.

# ECONOMIC FACTORS ASSOCIATED WITH DELINQUENCY RATES ON CONSUMER INSTALMENT DEBT

A. Charlene Sullivan

The successful creation and trading of debt contracts is based on the premise that the probability of financial failure can be quantified and controlled for a portfolio of contracts. Trends in loan delinquencies and losses over time and among credit types contain important information for credit managers and market analysts involved in that activity. For example, in their study of the correlation of loss rates over time for various types of consumer and mortgage loans, Ford and Stanley [1985] concluded that savings institutions could reduce the probability of loan losses in their portfolios by diversifying into consumer lending. The diversification came from the fact that loss rates for portfolios of consumer loans and mortgage loans were positively but only slightly correlated.

One purpose of this study is to quantify the significance of delinquencies as a determinant of the profitability of a portfolio of consumer loans. Another purpose is to identify economic factors associated with the variation in delinquency rates for consumer instalment loans between 1975 and 1986, with special attention to differences in factors associated with portfolio delinquency data for different types of consumer loans.

## I. Credit Risk Management

In theory, a value-maximizing lender would lower credit standards for new accounts accepted as long as incremental revenues exceed added costs of making the loans. Two components of the added costs of lowering credit standards are a slower collection period (or higher delinquencies) and larger bad debt losses. Changes in delinquencies and in expected loan losses associated with changing credit standards should have an impact on the price charged for contracts. And if credit losses or delinquencies are larger than anticipated, the lender's profits will suffer.

The following example is created to illustrate the nature of the relationship between delinquencies and credit losses and lender profits. Take a lender making one hundred $1,000 cash loans with an annual percentage rate of 18 percent. Assume that the lender's marginal noninterest cash costs of making the loan are 5 percent of the original balance, and assume that the cost of capital is 10 percent. Suppose the loan contracts specify that the loan principal plus interest is scheduled to be paid off completely in one instalment at the end of one year. Under these assumptions, the lender's expected before-tax benefit of making the loans, if all are paid as scheduled, is equal to

$$\text{benefit} = (-1050 \times 100) \; + \; (1180 \times 100)/(1+r)^t,$$

where r is the lender's before-tax annual opportunity cost of capital. At r = 10 percent, the expected profit from making the loans--when no loans are expected to be delinquent or default--is:

$$= -105{,}000 + 118{,}000/1.10$$

$$= -105{,}000 + 107{,}270$$

$$= \$2{,}270$$

If the lender decided to take on the risk that 2.1 percent of the contracts would be totally uncollectible, he would break-even on the business (recover his investment and make the required rate of return of 10 percent).

$$0 = -105{,}000 + [p(118{,}000)]/1.10 + [1-p(0)]/1.10$$

where $p = 97.8$ percent or the probability that the portfolio is collectible and on schedule ($1-p$ or 2.1 percent is the probability of default).

Assume on the other hand, that the loan payments are all collected but 30 days late. In that case the profitability of lending is reduced to $1,390, a reduction in net profit of 39 percent. Had the lender priced the loan contracts to reflect those costs of delinquency, the interest rate on the loans would have been approximately 19 percent instead of 18 percent. If the lender was faced with higher than expected delinquencies but was unable to raise interest rates he would have to raise credit standards for the portfolio to bring the profitability of the lending function back on target.

These examples show the importance in portfolio management of being able to predict collection problems for a given risk class of borrowers; price the contracts to reflect that risk; and understand how factors that are out of the lender's control might influence portfolio delinquency and default experience.

## II. Determinants of Changes in the Credit Quality of a Portfolio

Delinquency rates on a portfolio of credit contracts reflect the credit quality of the portfolio under a given regime of loan servicing policies. Credit quality of a loan portfolio could change because of external changes affecting the ability or willingness of existing borrowers to repay, such as a downturn in the economy or changes in bankruptcy laws. Alternatively, it could change if management decided to take more or less credit risk on new business, to alter its collection practices on existing loans, to write off bad loans more or less aggressively, or to sell off segments of the portfolio.

Borrowers' Ability to Repay. Borrowers have an economic incentive to default on credit contracts when perceived costs of default are lower than costs of staying current on the loan. Costs of default include the present value of payments that the borrower makes as a result of remedies that the lender may exercise, the effect of default on the borrower's future ability to obtain credit, and the price at which such credit would be available. The cost of staying current on the loan is the present value of current and future payments made according to the schedule specified in the contract.

Costs of default may exceed costs of staying current if a borrower's current or expected ability to repay debts out of income is reduced by unemployment or a cutback in work hours; if the cost of living increases faster than disposable income; or if a consumer assumes an excessive amount of debt relative to income.

Credit Portfolio Management Policy. Creditors may adopt policies that will result in shifts over time in the quality of their loan portfolio. To gain market share, for example, creditors might lower credit standards and accept greater credit risk. During periods when expected profit margins are high, lenders might lower credit standards. Conversely, at times when margins are squeezed by usury ceilings, lenders might raise their standards for acceptable credit applicants, thus causing portfolio delinquency rates to decline, holding other things constant.

The Model. This study provides an estimate of a time series model of variables associated with the proportion of the number of loans delinquent 30 days and over in portfolios of consumer instalment loans. Variation in the level of average delinquency rates for consumer instalment credit is formulated as a function of consumers' ability to repay and lenders' willingness to incur credit risk. Consumers' ability to repay is formulated as a function of the debt burden ratio (consumer credit outstanding as a proportion of disposable income), the unemployment rate, consumer expectations about future economic conditions, and the general inflation rate. Lenders' willingness to incur credit risk is specified as the market share of credit outstanding held by the particular lender group and the rate of growth in credit outstanding at the same lender group. Several lag specifications of the growth rate variable were tested because a high growth rate of credit outstanding could have the immediate effect of reducing the delinquency rate on a given portfolio. However, if credit standards were relaxed to achieve the growth then delinquencies would be expected to increase in subsequent periods.

## III. The Data

The data used in the analysis were seasonally adjusted delinquency rates for consumer loans held by commercial banks and auto finance companies measured monthly and made available by the American Bankers Association (ABA) and the Federal Reserve Board (FRB).

The ABA publishes a monthly composite figure that is an average of delinquency rates for eight types of closed-end consumer credit.[1] The delinquency rate for a given type of credit is calculated as the number of contracts with a payment delinquent 30 days and over, relative to the number of consumer contracts of the same type held by the same reporting banks.[2] The types of credit included in the composite delinquency rate are unsecured personal, direct auto, indirect auto, home appliance, FHA Title 1, property improvement, mobile home and recreational vehicle loans.[3] The delinquency rate for open-end bank credit cards, which is not included in the composite delinquency rate, is analyzed separately in this study.

The FRB collects and makes available delinquency data for the portfolios of the financial affiliates of the three major domestic auto manufacturers. That series is based on the number of indirect auto loan contracts outstanding at the finance affiliate with payments 30 days and over past due, relative to the total number of consumer contracts held by the reporting finance companies.

## A. Trends in Delinquency Rates

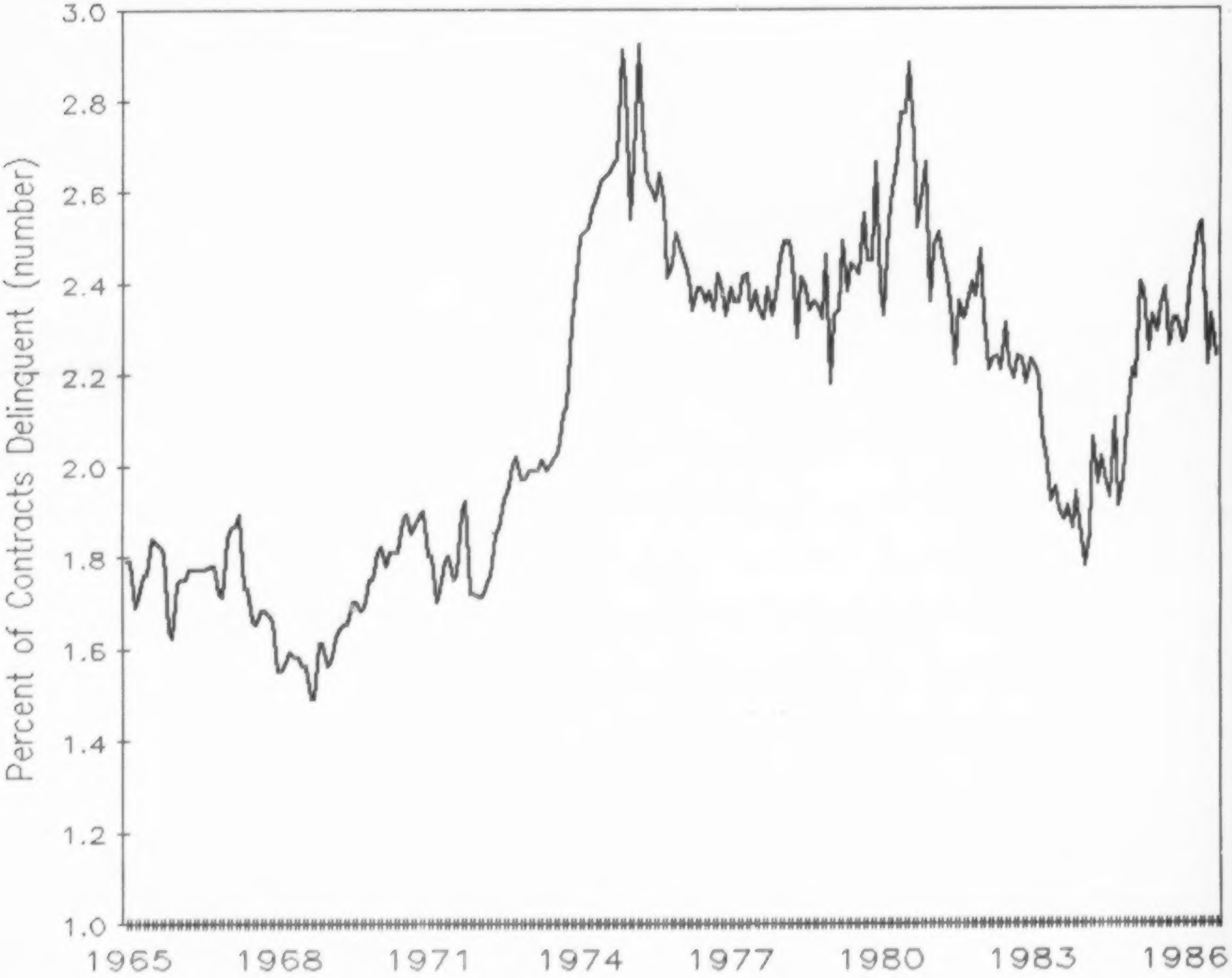
The Composite Rate. The composite ABA delinquency series may be a leading indicator of the general level of economic activity if it is a reflection of the health of household balance sheets and therefore households' ability and willingness to spend.[4] The composite delinquency rate for closed-end consumer loans at commercial banks fluctuated around an average level of 1.5 percent between 1965 to 1973 (Exhibit 1). Until 1974 the composite delinquency rate was always below 2 percent. Since then there has been an increase in the delinquency rate and the composite rate did not fall below 2 percent again until June 1983. For the entire period between 1974II and 1983IV, the average delinquency rate was 2.4 percent, a 56 percent increase over the average for the previous ten year period.

The present study identifies variables associated with consumer loan delinquency rates from 1975 to 1986. This period was characterized by intervals of high inflation as well as by changes in consumer credit regulations that impacted the competitive environment for credit, and in the economic characteristics of consumers using credit.[5]

The Individual Delinquency Series. Delinquency rates for each type of consumer credit included in the composite index for commercial banks follow somewhat different patterns over time. An examination of the individual series shows the variability in delinquency rates that can be diversified away, to some extent, for lenders' holding portfolios of various types of consumer loans. The ABA delinquency series for two groups of consumer

Exhibit 1

Closed-end Consumer Loan Delinquency Rates
At Commercial Banks
(seasonally adjusted; monthly)



SOURCE: American Bankers Association

credit are charted in Exhibits 2 and 3. Delinquency rates for selected types of secured loans (direct and indirect auto) are shown in Exhibit 2, while Exhibit 3 contains delinquency rates for unsecured loans (personal loans, bank credit cards and other revolving credit.)

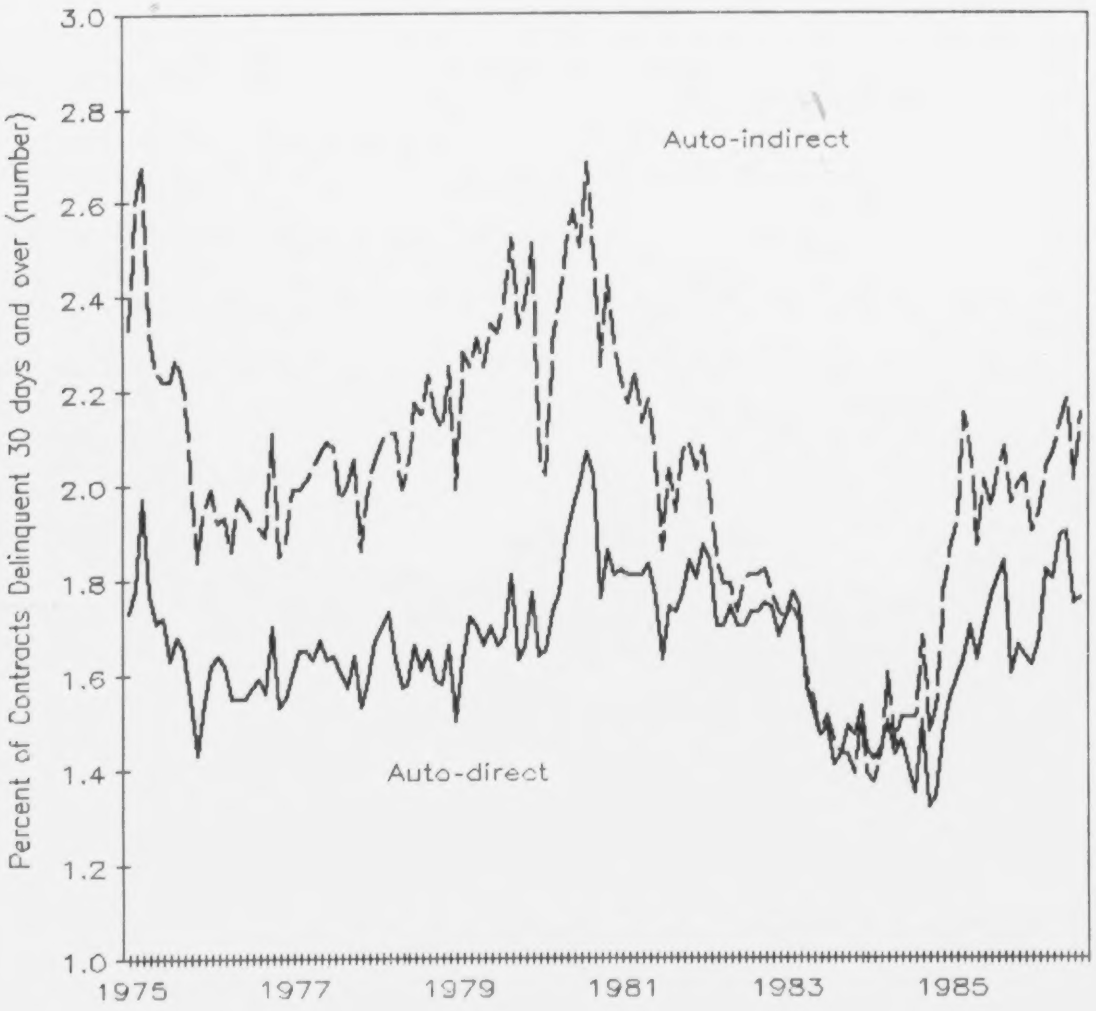
Between 1975 and 1985 the nature of credit risk for the two types of auto loans held by commercial banks changed (Exhibit 2). The difference in the credit quality of direct versus indirect auto loans disappeared between 1982 and 1984. Indirect customers became more like direct customers although historically, indirect borrowers had been less creditworthy (that is, the probability of delinquency was higher) than was the case for direct loan customers. In 1985, the more traditional distinction between delinquency rates for the two types of auto loans reappeared but the spread between them was not as large as it had been prior to 1985. These shifts in the risk character of auto loan portfolios held by commercial banks may be attributed to the changing competitive environment for auto credit, especially for indirect auto credit.

Unsecured loans which tend to be small are more risky than larger, secured auto loans. Reflecting this risk differential, unsecured personal loans showed much higher delinquency rates (Exhibit 3) than either direct or indirect auto loans (Exhibit 2). Moreover, delinquency rates on personal loans at banks were higher than for credit cards or other revolving credit (Exhibit 3).

Bank credit cards may have exhibited a lower default rate relative to unsecured personal loans because of the broad spectrum (in terms of risk) of consumers that hold such cards. Many cardholders use their bank card

Exhibit 2

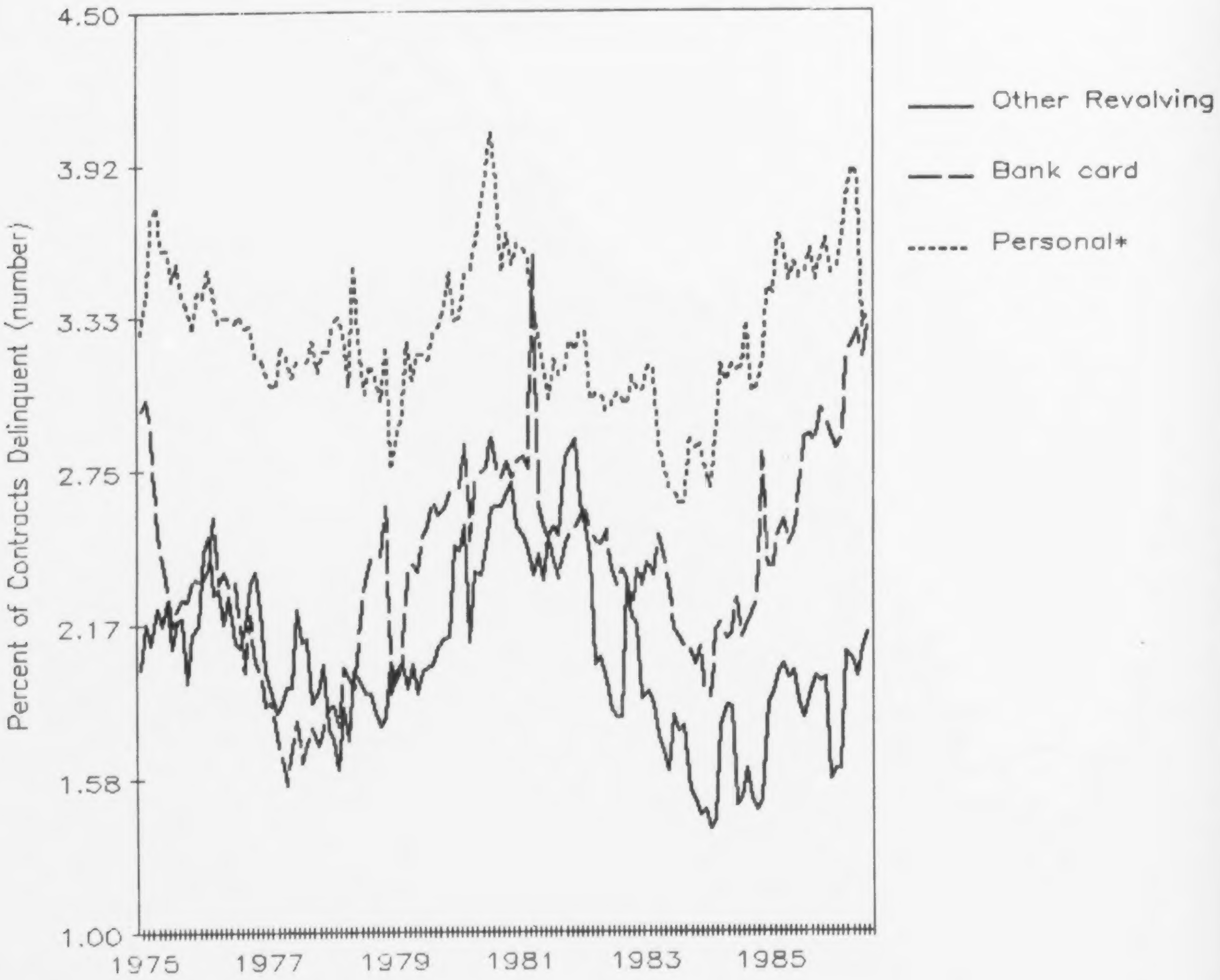
Delinquency Rates on Auto Loans Held by
Reporting Commercial Banks
(seasonally adjusted; monthly)



SOURCE: American Bankers Association

Exhibit 3

Delinquency Rates on Unsecured Consumer Loans
Held by Reporting Commercial Banks
(seasonally adjusted; monthly)



*As of 10/83 data for PERSONAL loans incude home appliance loans that were previously reported separately.

SOURCE: American Bankers Association

accounts as a convenient transaction medium and the credit risk of this group is by definition, virtually nil. The adjusted delinquency rate for a portfolio of revolving credit card outstandings, based solely on the percent of accounts that revolve rather than total accounts that include convenience as well as revolving credit, is dramatically higher than that for unsecured personal loans (Table 1). These adjusted rates give an idea of the possible impact on portfolio delinquencies of bank card pricing policies that would discourage the use of that product by the "convenience user."[6]

## IV. Factors Related to the Level of Delinquency Rates

### A. Analysis of Composite Delinquency Rates

In the analysis of the composite consumer loan delinquency rate (Table 2) the overall equation was significant and the explanatory power of the model was high ($R^2 = .78$). However, most of the coefficients of variables related to borrower ability to repay debts were not significantly different from zero. Only the coefficient of the debt burden variable was significant and positive. Holding other things constant, when the debt burden measure increased, the credit quality of portfolios of all types of closed-end consumer loans held by banks deteriorated.

Between 1976 and 1986, the share of total consumer credit outstanding held by commercial banks declined from almost 50 percent to 44 percent. This loss in market share was associated with a significant decline in delinquencies for the average total consumer credit portfolio of banks:

## Table 1

### Recalculation of Delinquency Rates on Open-end Credit Accounts at Reporting Banks

| | | Delinquency Rates on Portfolios | | |
|---|---|---|---|---|
| | Proportion of accounts that revolve | Bank Cards (revolving and convenience) | Adjusted Bank Cards (revolving only) | Unsecured Personal Loans |
| | (1) | (2) | (3) | (4) |
| 1981 | 0.653 | 2.53 | 3.87 | 3.2 |
| 1982 | 0.661 | 2.38 | 3.60 | 3.04 |
| 1983 | 0.699 | 2.08 | 2.98 | 2.84 |
| 1984 | 0.683 | 2.81 | 4.11 | 3.16 |
| 1985 | 0.703 | 2.95 | 4.20 | 3.63 |

1. Source: Federal Reserve Functional Cost Analysis 1981-1985. Figure reflects an average of data for credit card banks of different sizes.

2. Source: American Bankers Association year end data.

3. Column 2 divided by Column 1.

4. Source: American Bankers Association year end data.

the coefficient for the market share variable is significant and positive in the analysis of the composite delinquency rate.

When the growth rate of credit increased, the closed-end consumer loan portfolio delinquency rate for commercial banks declined significantly, holding other things constant. Coefficients for lagged values of the growth rate in bank portfolios were not significant. During the analysis period, portfolio managers achieved growth without reducing portfolio credit quality. This result could reflect the effects of inflation, deregulation and federal income taxes on incentives to borrow for households that might not have previously used consumer credit.[7]

Several recent analyses of the debt burden ratio have suggested that changes in consumer use of credit and in the types of credit available have reduced the value of this statistic as a measure of consumer ability to repay.[8] The high level of significance of the relationship between the delinquency rate for a diversified portfolio of closed-end consumer credit at banks and the debt burden measure reinforces the value of the debt burden measure is a valuable coincident indicator of the ability of households' borrowing from banks to manage their indebtedness and a robust indicator of the quality of consumer loans outstanding issued by commercial banks.

In their analysis of the delinquency rate for closed-end consumer loans between 1951 and 1974, Peterson and Luckett (1976) found that portfolio credit quality was significantly associated with variables related to employment conditions. The lack of association of the employment variables in the 1975-86 period may reflect (a) the decline in

### Table 2

### Analysis of Delinquency Rates on Consumer Instalment Credit at Commercial Banks (monthly rates, January 1976 to August 1986)

| Variables | Coefficients/<br>(t-statistics) |
|---|---|
| Hours worked per week | -0.02<br>(-0.97) |
| Unemployment | -0.003<br>(-0.07) |
| Inflation | -0.32<br>(-0.25) |
| Debt burden | 5.80*<br>(1.92) |
| Sentiment | -0.003<br>(-1.15) |
| Market share | 4.16*<br>(2.42) |
| Growth rate | -0.006*<br>(-2.97) |
| Constant | 0.90<br>(0.39) |
| Adjusted $R^2$ | 0.78 |
| Durbin-Watson | 2.26 |
| | C-O |

*Significant at the five percent level.

C-O = Cochrane-Orcutt transformation.

| Variable | Definition |
|---|---|
| Hours worked per week | Average total hours worked per week in manufacturing sector, including overtime hours. Source: Current Business Statistics |
| Unemployment | Percent of total civilian labor force unemployed. Source: Bureau of Labor Statistics |
| Inflation | Annual inflation rate based on Consumer Price Index. Source: Business Conditions Digest |
| Debt Burden | Ratio of total consumer credit outstanding to disposable personal income. Sources: Federal Reserve Board and Current Business Statistics |
| Sentiment | Index of Consumer Sentiment. Source: Created from monthly surveys of consumers by Survey Research Center, University of Michigan |
| Market Share | Share of type of consumer credit outstanding held by relevant type of institution. Source: Federal Reserve Board |
| Growth Rate | Annualized growth rate of type of credit outstanding held by type of institution Source: Federal Reserve Board |

importance of the manufacturing sector (the hours in the work week variable is based on employment conditions in the manufacturing sector) or (b) the coinsurance benefits of having two workers in a family (two-income households which have become more numerous and are significant users of consumer credit).[9]

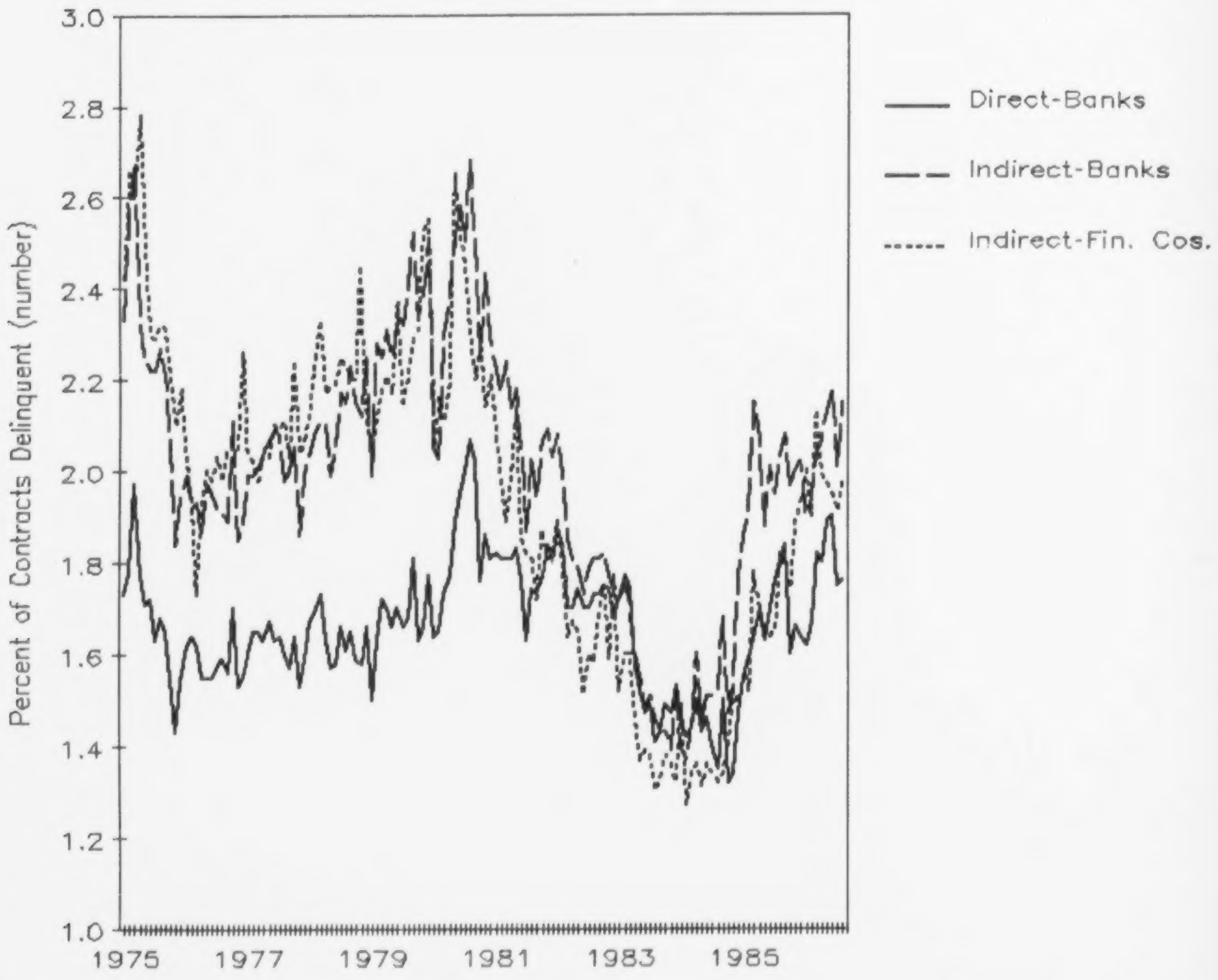
## B. Analysis of Delinquency Rates on Auto Credit

Auto credit makes up about two-fifths of total consumer credit outstanding, and accounts for the bulk of the dollar volume of all secured consumer credit outstanding. Because the presence of security raises the cost of default for the borrower, delinquency rates on secured loans may be less associated with macroeconomic conditions than delinquencies on unsecured contracts. Also, the delinquency rate for secured loans may be lower than that for consumer loans in general because of the higher average credit quality of borrowers who have assets to offer as collateral.

During the study period, many developments changed the positions of various competitors in the market for auto credit and the profile of consumers using credit to buy a car.[10] From 1975 to 1986, there was little difference between rates of delinquency on indirect auto credit at commercial banks and auto finance companies (Exhibit 4). Until 1982 portfolios of indirect auto contracts (regardless of holder) had higher delinquency rates than portfolios of direct auto contracts (Exhibit 2). In 1982 however, the portfolio risk for the two lender groups and the two types of contracts converged. Factors associated with these trends are analyzed in the next section.

Exhibit 4

Auto Loan Delinquency Rates at Commercial Banks and Finance Companies
(seasonally adjusted; monthly)



SOURCE: American Bankers Association and Federal Reserve Board

Indirect Auto. From 1975 to 1986, delinquency rates for the indirect auto loan portfolios held by auto finance companies and commercial banks were significantly and positively associated with the consumer debt burden ratio (Table 3). Neither the unemployment rate nor the inflation rate were significantly associated with delinquencies for indirect auto loans held by commercial banks, although the coefficients of both variables were significantly positive in the analysis of the auto finance company delinquency rates. The significance of these variables in the equation for auto finance companies may indicate that the customers served by auto finance companies are more susceptible to changes in general business conditions than customers served by banks--characteristics that would make portfolio risk for auto finance companies higher than that for banks.

During the period included in the analysis, the average maturity of auto credit contracts increased dramatically and auto finance companies also offered credit contracts with below-market interest rates to increase auto sales. Both of these developments affected the growth of credit outstanding and the market shares of auto credit held by finance companies and banks. In the analyses of delinquency rates on indirect loan portfolios, the coefficients of the market share variables were significant but had opposite signs for the two competitors. The market share of auto credit held by auto finance companies increased from 19 percent in 1976 to almost 40 percent in 1986. During the same time period, the share of auto credit held by commercial banks declined from 50 percent to approximately 44 percent. The sign of the coefficient of the market share variables suggests that auto finance company gains in market share improved the

Table 3

Analysis of Delinquency Rates on Indirect Auto Loans
(monthly rates, January 1976 to August 1986)

|  | Commercial Banks | Auto Finance Companies |
|---|---|---|
| Variables | Coefficients/ (t-statistics) | Coefficients/ (t-statistics) |
| Hours worked per week | -0.001<br>(-0.60 ) | -0.02<br>(-0.66) |
| Unemployment | 0.04<br>(0.93) | 0.12*<br>(2.48) |
| Inflation rate | 1.82<br>(1.44) | 3.00*<br>(2.18) |
| Debt burden | 13.99*<br>(4.25) | 19.47*<br>(4.91) |
| Sentiment | -0.003<br>(-1.26) | -0.003<br>(-1.02) |
| Market share | 2.34*<br>(3.58) | -3.50*<br>(-5.54) |
| Growth rate | -0.005*<br>(-3.10) | -0.0001<br>(-0.16) |
| Constant | -2.86<br>(-1.23) | -3.46<br>(-1.40) |
| Adjusted $R^2$ | .87 | .87 |
| Durbin-Watson | 2.15 | 2.26 |
|  | C-O | C-O |

*Significant at the five percent level.

C-O = Cochrane-Orcutt transformation.

overall quality of auto finance companies' loan portfolios without having an adverse effect on the risk of the indirect loan portfolio held by banks. As banks' market share declined, the portfolio delinqeuncy rate also declined.

The coefficient of the growth rate variable was significantly negative for indirect auto loan portfolios at commercial banks but insignificant in the analysis of delinquency rates in auto finance company portfolios. Again, the coefficient of the growth rate variable suggests that during the analysis period, lenders were not taking more credit risk as they expanded the quantity of auto credit outstanding. This result may be attributable to the value of lengthening maturities on contracts as a means of making more credit available while reducing the cost of credit, in terms of monthly cash flows and thus controlling delinquency risk.

Direct Auto. Delinquency rates for direct auto loans held by commercial banks were a significant positive function of the debt burden ratio but were not significantly associated with other variables influencing borrower ability to repay. These include the unemployment rate, hours per work week, rate of inflation, or consumer sentiment (Table 4). It appears from these results that customers with direct auto loans from commercial banks were fairly well insulated from fluctuations in the business cycle. The delinquency rate was a significant negative function of the growth rate of credit outstanding but was not associated with the market share variable.

### Table 4

### Analysis of Delinquency Rates on Direct Auto Loans From commercial Banks (monthly rates, January 1976 to August 1986)

| Variables | Coefficients/<br>(t-statistics) |
|---|---|
| Hours worked per week | -0.02<br>(-1.43) |
| Unemployment | 0.02<br>(0.81) |
| Inflation Rate | 0.57<br>(0.63) |
| Debt Burden | 4.51*<br>(1.93) |
| Sentiment | -.001<br>(-0.79) |
| Market share | 0.28<br>(0.60) |
| Growth rate | -0.004*<br>(-3.25) |
| Constant | 1.09<br>(0.67) |
| Adjusted $R^2$ | 0.74 |
| Durbin-Watson | 2.13 |
|  | C-O |

*Significant at the five percent level.

C-O = Cochrane-Orcutt transformation.

### C. Delinquency Rates for Bank Credit Cards

The average annual rate of growth (based on monthly data) of revolving credit outstandings held by commercial banks during the period included in the study was 17.5 percent, almost double the average growth rate of closed-end consumer instalment credit at the same reporting group. The phenomenal growth in the amount of revolving credit outstanding has raised concerns about the quality of credit card portfolios.

This analysis of factors associated with delinquency rates on portfolios of revolving credit accounts at banks shows a significant positive association with the consumer debt burden ratio and with the unemployment rate (Table 5). But as the rate of growth of revolving credit outstanding increased, portfolio delinquency rates declined. These results imply that events such as tax reform, market saturation, or a slowdown in the economy which would slow the rate of growth of revolving credit outstanding could have a negative effect on the quality of credit card portfolios.

## VI Summary

At the margin, the amount of credit risk incurred by a lender--as measured by costs associated with late payments and bad debt losses--is determined by the expected incremental benefit of making the loan. As those credit costs increase, interest rates must be raised or credit policies changed to bring costs and benefits back in balance. Thus, the amount of delinquency risk incurred is a reflection of a management decision.

## Table 5

### Analysis of Delinquency Rates on Bank Card Credit (monthly rates, January 1976 to August 1986)

| Variables | Coefficients/(t-statistics) |
|---|---|
| Inflation rate | 0.80<br>(0.36) |
| Debt burden | 26.33*<br>(4.23) |
| Sentiment | -0.005<br>(-1.32) |
| Growth rate | -0.003*<br>(-2.22) |
| Growth rate (t-1) | 0.001<br>(0.66) |
| Unemployment | 0.11*<br>(1.90) |
| Constant | -3.14<br>(-0.97) |
| adjusted $R^2$ | 0.85 |
| Durbin-Watson | 2.31 |
|  | C-O |

*Significant at the five percent level.

C-O = Cochran-Orcott transformation

However, delinquencies in consumer credit portfolios are dynamic--changing not simply with shifts in credit management policies but also with macroeconomic conditions affecting the ability of consumers to repay debt.

This study provides an analysis of the effect of management policies and macroeconomic variables on delinquency rates on consumer loan portfolios. For all types of consumer credit analyzed, ratios of consumer debt to disposable income were significantly and positively associated with the portfolio delinquency rates. Employment conditions, the inflation rate, and an index reflecting consumer optimism or pessimism about general business conditions were not associated with delinquency rates on closed-end consumer loan portfolios held by commercial banks. However, delinquency rates for auto loans held by auto finance companies and for credit card portfolios were positively associated with some of the same variables.

The loss of market share by commercial banks between 1975 and 1986 (largely due to changes in the auto credit market) was associated with an improvement in the quality of bank closed-end consumer loan portfolios. And high rates of growth for all types of consumer credit held by commercial banks had a positive effect on portfolio quality between 1975 and 1986. The growth in credit outstanding during that period has been partly attributed to the increased use of credit by high income consumers--a scenario which is consistent with our results and with the positive effects of growth on portfolio risk.

Shifts in market share in the auto credit market between 1980 and 1986 appear to have reduced portfolio risk for auto finance companies--a reduction that was not offset by any negative effects of rapid growth in their holdings. In general however, the quality of auto loan portfolios held by auto finance companies during the period deteriorated significantly with increases in unemployment and inflation.

Delinquency rates on revolving credit portfolios increased significantly with the consumer debt burden and with the unemployment rate. And the rapid rate of growth of revolving credit during the last ten years has had the effect of keeping the portfolio delinquency rate low.

The results of this analysis suggest that changes in economic conditions that are accompanied by a slowing of the rate of growth in consumer credit may be associated with significant deterioration in consumer credit portfolios. Credit growth has been achieved in the last 10 years with products that have made credit more attractive to better quality credit customers and with innovations such as lengthening loan maturities. Externalities such as tax reform could slow the growth trend, leaving lenders with less ability to achieve portfolio growth without taking more credit risk or without cutting prices.

## Footnotes

[1] The rate is a weighted average based on the number of loans outstanding.

[2] The sample of surveyed banks has not been constant over time.

[3] In the fourth quarter of 1983, the formula for the composite delinquency rate changed. The home improvement and FHA title I series were consolidated. Home appliance and unsecured personal were also consolidated and a second-mortgage loan series was added.

[4] See Moore and Klein, Chapter 6.

[5] See Sullivan, A. C., "Consumer Credit: Are There Limits?" Journal of Retail Banking Vol. 8, No. 4 Winter 1986-87, pp. 5-18.

[6] See Canner and Cyrnak.

[7] See note 4 above.

[8] See Luckett and August (1985), Pearce (1985).

[9] Sullivan and Worden (1986) found that two-income households were more likely to use consumer credit and used more credit relative to income, than other types of households.

[10] See Luckett and Westfall.

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# APPENDIX

## Delinquency Rates on Indirect Auto Loans at Finance Companies
January 1973 to August 1986

Number of Loans Delinquent 30 Days and Over as a Percentage of Number of Loans Outstanding
(seasonally adjusted)

| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1973 | 2.44 | 2.31 | 2.32 | 2.22 | 2.22 | 2.25 | 2.21 | 2.24 | 2.25 | 2.37 | 2.46 | 2.38 |
| 1974 | 2.41 | 2.58 | 2.54 | 2.56 | 2.68 | 2.62 | 2.62 | 2.62 | 2.58 | 2.64 | 2.55 | 2.81 |
| 1975 | 2.42 | 2.66 | 2.60 | 2.78 | 2.49 | 2.30 | 2.29 | 2.32 | 2.31 | 2.19 | 2.10 | 2.18 |
| 1976 | 2.03 | 1.94 | 1.73 | 1.94 | 2.00 | 1.98 | 2.03 | 1.98 | 2.04 | 2.03 | 2.05 | 2.26 |
| 1977 | 2.04 | 2.02 | 1.98 | 2.05 | 2.03 | 2.10 | 2.09 | 2.11 | 2.03 | 2.24 | 2.04 | 2.07 |
| 1978 | 2.13 | 2.24 | 2.33 | 2.17 | 2.19 | 2.19 | 2.25 | 2.23 | 2.20 | 2.20 | 2.45 | 2.14 |
| 1979 | 2.03 | 2.12 | 2.18 | 2.21 | 2.17 | 2.37 | 2.14 | 2.20 | 2.29 | 2.30 | 2.53 | 2.55 |
| 1980 | 2.05 | 2.16 | 2.11 | 2.19 | 2.65 | 2.52 | 2.45 | 2.31 | 2.20 | 2.28 | 2.14 | 2.21 |
| 1981 | 2.09 | 1.98 | 1.89 | 1.98 | 2.14 | 1.85 | 1.82 | 1.81 | 1.72 | 1.87 | 1.81 | 1.83 |
| 1982 | 1.89 | 1.79 | 1.64 | 1.67 | 1.65 | 1.51 | 1.60 | 1.58 | 1.68 | 1.75 | 1.59 | 1.77 |
| 1983 | 1.52 | 1.60 | 1.60 | 1.47 | 1.37 | 1.39 | 1.38 | 1.30 | 1.33 | 1.38 | 1.36 | 1.32 |
| 1984 | 1.49 | 1.27 | 1.34 | 1.36 | 1.31 | 1.36 | 1.34 | 1.32 | 1.34 | 1.40 | 1.52 | 1.49 |
| 1985 | 1.56 | 1.52 | 1.78 | 1.70 | 1.63 | 1.64 | 1.65 | 1.82 | 1.79 | 1.74 | 1.89 | 1.93 |
| 1986 | 2.00 | 1.90 | 2.13 | 1.99 | 1.97 | 1.95 | 1.91 | 1.97 | | | | |

Source: Board of Governors of the Federal Reserve System.

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